

FAIR MANAGEMENT

THE STORY OF A CENTURY OF PROGRESS

LENOX R. LOHR

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To Stewart Howe
Trusting that this book
will add to your understanding
of Fair operations.

Lenox R. Lohr

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FAIR MANAGEMENT

FAIR

A Guide For Future Fairs

MANAGEMENT

The Story of A Century of Progress Exposition



by **LENOX R. LOHR**

General Manager of A Century of Progress

President of the Museum of Science & Industry

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This Book Is Dedicated To My Wife

JOSEPHINE WIMSATT LOHR

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FOREWORD

The impact of fairs on the culture and civilization of the world dates back to Biblical times. The Book of Esther tells how Assuerus, who reigned from India to Ethiopia, called all the nobles and the people to a great festival "that he might show them the riches of the glory of his kingdom and the greatness and boasting of his power, for a long time, to wit, for a hundred and fourscore days."

Down through the ages fairs have marked significant milestones in man's development, for each generation has felt the urge to vent its pride and demonstrate its progress and the quality of its products. Fairs have greatly accelerated the acceptance of new methods and of scientific, technical and agricultural discoveries. Masses of people assembled from distant parts saw for the first time recent developments that could be useful to them and thus was speeded the otherwise lengthy interval between inception and general public acceptance.

And so through the halls of future times there will ring the gay voices of crowds seeking that which is new, and, since human nature changes but little, that which is old. There were skeptics in 1930 who felt that the day of fairs was over. They reasoned that the world had become sophisticated and blasé—through the printed word and the radio, people had heard all worth hearing, and with the ease of travel made possible by the automobile, they had seen all worth seeing. The doubters proclaimed that the day of the "hick" was gone forever, and with him the reason for a fair. That they were wrong was amply attested by the record-breaking crowds which have attended fairs since.

There will be fairs in the future, and their promoters and administrators will be faced with the same problems that have baffled their predecessors, for major

fairs are not going concerns—each one is born anew. The failures and successes, the pitfalls and fortuitous events of A Century of Progress are told in this book. May it serve as a “lamp of experience.”

As a history it will fall short of covering much that happened or was shown. But it has a more significant purpose than recording those events, though it is hoped that it will be of nostalgic interest to those who participated in A Century of Progress. It has been written with the desire to give all possible help to those who may project or operate a fair in the future. Better to serve this latter group, there have been included discussions of the basic principles of fair operation, most of which were learned in the hard school of experience. While each fair is unique, with considerations peculiarly its own, there are certain fundamentals applicable to all and which time will modify only slightly. Fairs that were not successful financially have not necessarily lacked high entertainment value, spectacular proportions or large attendances, but rather there was a failure to understand some fundamental concepts. An attempt has been made in this book to delineate and evaluate them.

This account has been written many years after the event which gives it the benefit of perspective and a more philosophical viewpoint of predicaments than would have been possible at closer range. The basic data were prepared in great detail by the heads of the various departments and divisions during the Exposition and immediately thereafter, thus providing a higher degree of accuracy than would memory.

A Century of Progress was conceived in the boom year of 1927. It was constructed and held during the great depression of the thirties. This combination was a blessing, even if in disguise, for its conception was on a grand scale and its execution was at a time of surplus high-grade manpower and a dearth of construction projects which made each dollar do the work of two.

Opening to the public in May of 1933, the Fair was a bright spot in a world of gloom. It did much to redeem the reputation of Chicago from its stigma of the prohibition era. Two hundred million dollars of fresh capital poured into Chicago, rescuing many of its institutions from bankruptcy. It showed the millions of visitors that Chicago is a grand city to bring their business to and to settle down in with their families.

It is now only a memory, but one which Chicago cherishes. The paid attendance of over 39,000,000 was the largest of any American fair up to that time. The nearest approach had been the 21,000,000 who attended Chicago's World Columbian Exposition in 1893.

The Exposition's outstanding achievement was that all debts and obligations were paid in full, and, when the final settlement was made, there was a surplus of a hundred and seventy thousand dollars which was distributed to scientific institutions whose purpose was similar to that of the Fair.

There was at times considerable local skepticism as to whether the Fair would ever be opened, and when this was transmitted to important business interests it added one more obstacle to be overcome. That the Fair would

actually open was never doubted by the staff. The only question would be its size and extent. No expenditures were made until the actual cash was on hand to meet them. And the construction developed into a contest between time and money. The primary goal was to open complete and on time. This was done, although drastic measures in the last weeks were required to accomplish it. It was vital that the first visitors receive a favorable impression.

The Mayor of Chicago and the President of the Park District with their associated officials were at all times cooperative and maintained a keen interest in the welfare of the Exposition. There was never a hint of political pressure, and this, to a large measure, contributed to the Exposition's ultimate success.

It is not contemplated that everyone who reads this book will do so from cover to cover, but rather it is believed that most readers will seek those sections of particular interest. Therefore an attempt has been made to make each chapter a complete summary of the phase or activity it describes. This necessarily involved some repetition of material covered elsewhere.

The thanks of the author are extended to Mr. John F. Cuneo, President of The Cuneo Press, Inc., for his personal interest in publishing this volume. It is suspected that he had a sentimental interest, for his company printed the guide books and many other publications of the Exposition. His enthusiastic and loyal support in periods of stress and financial stringency during per-opening days was a material factor in getting the Fair off to a good start.

The illustrations in the book are reproduced through the courtesy of Kaufman & Fabry Company, the official photographers of the Fair.

To give due credit here to the thousands of loyal and effective workers on whom the success of the enterprise depended would make this entire volume an *encomium* to their work.

No adequate tribute can ever be paid to Rufus C. Dawes, A Century of Progress's President, for the influence his fine personal qualities exerted upon those privileged to be his associates was of such depth and value that it remains among their most precious memories.

His scholastic achievements were high, he had successfully conducted many industrial enterprises and he had a distinguished record of public service, but in our work with him this background was transcended by his fine personal qualities.

Reading was an absorbing interest and, being a philosopher and student by nature, he was astute in his selection of the worthwhile. He pondered each thought as it was presented, weighed it critically, and then discarded it as unsound or made it an integral part of his philosophy if he believed it had merit. The result was a mental retention of basic principles in politics, religion, social forces, business, and many other fields.

All who listened to him learned. Twice daily for four years I rode with him between Evanston and the World's Fair Grounds, and the time consumed on these trips will remain forever in my memory as the most profitable hours I have ever spent. He was an absorbing conversationalist and, while he had a

keen sense of humor and adeptness of expression, he never indulged in banalities. His conversations were illuminated by his broad philosophy, his interpretations of past and current events, his belief in God, his impeccable living and honest thinking. His judicial mind made practical application of his store of knowledge, enabling him to find the obstacles that would confront one, and to know how to meet them. No man ever gave more freely to his friends the benefits of such counsel, while, at the same time, encouraging them to think and act independently. This inherent understanding was frequently misunderstood and was certainly unappreciated by casual acquaintances.

My first insight into this phase of his character came early in the Fair construction period when I went to him for counsel on extremely important negotiations scheduled for the next day. He listened attentively to my story and then went into a reminiscence of some twenty years before, and I, wishing impatiently to bring his thoughts back to the subject at hand, had to listen to an account of the discussions of a committee meeting of the Illinois Constitutional Convention. It was much later that evening that the light suddenly dawned. His basic philosophy was to give authority where he had entrusted responsibility, because he realized that in an intricate negotiation, the negotiator should not be so bound by instructions that he would be unable to take full advantage of unforeseen opportunities as they presented themselves. Every thought he had had in that conversation was focused on my problem and every word he had said had a direct bearing on it. He had drawn upon his own experiences to find those instances which most nearly paralleled mine of the moment, and, although he had given me the last drop of his wisdom, he had presented it in such a way that it was usable without tying my hands.

He, therefore, gave the fruits of his wisdom in such a way as to enhance their usefulness without insisting on their use. Mr. Dawes was one of the most completely unselfish of men. I never knew him to expect anything in the way of praise, power or wealth, and he would put himself in the background in order that another, or a project for which he worked, might succeed. He lost no opportunity to give credit for and to extoll the work of those under him, and he was as proud of the accomplishments of his associates as if they were his own.

It was this fairness and leadership that made the staff of A Century of Progress willing to make personal sacrifices, to work beyond the point of fatigue, and to fight to make the Fair a success. Mr. Dawes' high courage was a source of inspiration. His attitude towards adversity, sorrow, or disappointment was, when it became inevitable, to accept it without complaint and immediately to face the next task.

Rather than be hurried to decisions of gravity, he would withstand strong pressure and criticism for failure to act. He often said that it was when circumstances were most urgent and action most imperative that one should work his mind the hardest and refuse to be rushed into decisions dictated by impulse.

The author expresses his appreciation to many who have assisted in the preparation of this manuscript, to Malcolm McDowell, Mrs. Dorothy O'Neil,

George Barclay, J. Franklin Bell, Miss Helen Bennett, Daniel M. MacMaster, Mrs. Janice R. Feldstein and Miss Janet E. Irwin, but particularly to Miss Martha Steele McGrew, who, as administrative assistant to the General Manager, was in a position to have a more comprehensive view of the entire operation of the Fair than any other staff member.

LENOX R. LOHR

November 1st, 1951
Chicago, Illinois

Chapter I

EARLY HISTORY

A Century of Progress, celebrating Chicago's one hundredth birthday, was the first high radiance in the gray of a steadily darkening sky. The first lift in the long depression, the Fair was the symbol of the venturesome pioneer spirit that has made Chicago great.

The city was built in the brief span of one hundred years from a swampy frontier outpost into a world metropolis. At the time of its incorporation as a town in 1833, its population was about four thousand. The young town's small commerce was carried by wind-driven ships and covered wagons. Its few streets were muddy trails; its homes and business establishments were log cabins and frame shacks. Trade was largely a matter of barter. Flintlock rifles were still in use, and Indians stalked the way that was to grow into State Street. Coonskin caps and leather leggings were the dress of the citizens.

These pioneers were men of enterprise and hardihood. With resolute labor and persistent vision they surmounted an amazing series of formidable obstacles. When the little town was but a few years old, there came the panic of 1837. Scarcely had there been time to stabilize civic and economic life when the Civil War tore the country. The young city suffered from the panic of 1873 that followed so closely on the great conflagration of 1871 which destroyed most of the city as it then existed. Its quick rebuilding was a Herculean task that amazed the nation.

The surmounting of so many difficulties engendered in Chicago a spirit of confidence, and developed an unflinching determination that blossomed into its courageous motto: "I Will".

Chicago As an Exposition City

Today, the frontier outpost of the 1830's is the fourth largest city of the world. Through a fortunate proximity to vast stores of raw materials and an agricultural hinterland of great richness and productivity, it has become not only one of the leading industrial cities of this country, but one of the greatest grain and lumber markets of the world. Founded in the beginning at a natural portage on a mighty inland sea, Chicago has held and enhanced its position of traffic importance. Land transportation facilities have made it the great railroad center of the United States, with seventy percent of all the country's trackage within a 500-mile circle. It is a terminal point for thousands of miles of air routes operating on regular schedules, and is an important harbor for water borne traffic.

With a large number of small parks and playgrounds, miles of boulevards, an extensive outer park or forest preserve system, and numerous bathing beaches along its lake front, Chicago's people enjoy unexcelled recreational advantages. Exceptional opportunities are offered by its educational institutions which are world famous for their diversity and high academic standards.

Virtually unlimited space for residential and commercial growth, a boundless water supply for both domestic and industrial purposes, and its position as hub of the nation's transportation facilities promise the city a future as progressive as its past has been constructive.

Sixty years had gone into the building of Chicago before the shining white city that was the World's Columbian Exposition of 1893 attracted the attention of the world to the young city by the lake.

Events moved more rapidly after that. Forty years later the grown-up city was ready for another great world's fair. Chicago's one hundredth birthday was worthy of notable observance. The fair of 1893 had been a landmark in the city's history and growth. The birthday exposition must translate clearly through modern thought and showmanship the amazing results of the swiftly moving four decades.

First Ideas and Their Abandonment

Like all such projects this idea had to progress through nebulous stages before any practical development could be realized. One of its earliest presentations in tangible form, made before the Commercial Club, was rejected. However, numerous individuals, notably W. E. Clow, Myron E. Adams, Albert A. Sprague, and D. F. Kelly, continued active in the urging of this celebration and in response to their request Mayor William E. Dever, on April 8, 1926, called a meeting of citizens in his office. After some discussion it was resolved that an organization should be effected to make plans for such a celebration, and the mayor appointed a ways and means committee of which Edward N. Hurley was chairman.

The objectives given this committee were to outline the scope of the centennial

celebration and to prepare a program of its organization and activities. In one sense this committee set a precedent that was followed later in the permanent organization. It was motivated by a fine idealism and envisioned high purposes. It stressed the necessity of service to humanity and of the creation of lasting values. While in themselves these plans did not come to fruition, appreciative tribute must be paid them for they set the mind of the public to thinking on a large rather than a small scale, and they established a lofty goal to be handed down from group to group. When the committee had served its purpose it asked to be released and, on July 8, 1927, Mr. Hurley and the members of his committee tendered their resignation to Mayor William Hale Thompson, William E. Dever's successor.

The seed had now been planted and eventually it germinated and blossomed. But the project was to run the entire gamut of doubt, of lack of confidence, and of poverty. There were many times—up to the very day the gates were opened—when only those working on the grounds and a small but faithful group of Chicago citizens were firm in their belief that the Centennial would be a success, and that a second Exposition could be as triumphant as its predecessor. Could those who had inspired the early efforts have foreseen this long path of hardship and travail, it is to be wondered whether they would have deemed it worth while. To have been instrumental in bringing about the justification of that early sowing was one of the high satisfactions of those who carried on.

Mayor Thompson, after studying the report of Mr. Hurley's committee which had resigned, sought the advice of a number of prominent citizens concerning the value of a Fair and found the consensus to be that it was unreasonable to expect such a project to succeed. Arguments were many and varied. The doubtful outcome of the Sesquicentennial Exposition in Philadelphia in 1926 was cited. Stress was laid on the business depressions that frequently followed and often were attributed to expositions. Civic apathy and lack of public interest were pointed out. It was maintained that the universal advantages of the radio, the moving pictures and the automobile had produced a generation of sophistication that had no concern with expositions. The day of the World's Fair had passed.

The City Council voted against any further action on the centennial celebration and, a month later, the Mayor announced that the project of holding a world's fair had been abandoned.

Revival

But the idea was not dead. It was merely in a state of suspended animation until Charles S. Peterson, by personal and individual effort, accomplished its revival. He enlisted the enthusiastic approval of General Charles G. Dawes, then Vice President of the United States, and this gave the needed impetus to assure the revival of the project. Mr. Peterson was tireless in seeking out those individuals who shared his view, for he recognized that, while scattered, they would be ineffective unless organized into a working unit.

On the invitation of Mr. Peterson a group of eleven met at the Chicago Athletic Club on November 27, 1927. After listening to the arguments in favor of holding a fair, those present expressed themselves as unanimously in favor of the project and a resolution was drawn up by Mr. B. E. Sunny strongly endorsing the project and suggesting that a public meeting be held in the City Council Chambers in the near future. It was felt that this would put the idea to the crucial test. Possible rejection of the attempt to revive enthusiasm was faced, but it was felt that while this possible lack of approval might mean delay, it could no longer frustrate the movement.

This meeting, held in the City Council Chambers on the afternoon of December 13, 1927, was a glowing chapter in the history of the Centennial's development. Chicago's gallant optimism prevailed. Twelve outstanding citizens, voicing their opinions, found they were practically of one mind. Their enthusiasm was based on substantial foundations; their conclusions were backed by formidable facts; and as the meeting progressed it became clear that at last the Centennial had behind it a closely knit body of vigorous protagonists.

A motion presented by B. E. Sunny and adopted unanimously, summed up the sentiments expressed by the speakers. "It is the unanimous sentiment of this committee that the centennial of Chicago be amply and fully celebrated by its citizens; that they invite and urge others from every part of the world to come here and join with them on that occasion, and that the common gathering place should be a second exposition, as wonderful and exhaustive, and as representative of the progress of the world in 1933, as was the Columbian Exposition in 1893.

"RESOLVED, that we pledge our loyal and hearty cooperation at all times with this great project."

Mr. Peterson, by resolution, was named the chairman of an Organization Committee which was given full power to act. The other members were Samuel Insull, B. E. Sunny, J. E. Gorman, F. L. Bateman, Chauncey McCormick, D. F. Kelley, Edward N. Hurley, and Ruth Hanna McCormick. Mayor Thompson also appointed a general committee of several hundred men and women. The organization of these two groups marked the placement of the Exposition in private hands, rather than as a municipal undertaking.

It is felt that a more auspicious foundation could scarcely have been laid for any enterprise; there was evident a feeling of relief over the ending of doubt and uncertainty. But this happy state of mind was tempered by the conviction that an immense undertaking, attended by vast responsibilities, had been laid upon the people of Chicago; that, alone, the Organization Committee was helpless without the confidence, the active cooperation and the loyal backing of the city's people.

None realized this more keenly than the members of the committee themselves when they met to select their president, their leader. In the words of one of them all recognized that "every great enterprise is the lengthened shadow of a man." They felt that the project would encounter conditions such as no previous exposition had faced; that its activities would lead them in directions where

there were no guide posts. The entire situation demanded a leader of resourcefulness who would see the project through to its conclusion. They knew they must have a man of sound economic judgment, capable of adjusting himself and his enterprise to changing conditions, one who had had a successful business career, who had made civic contributions to his community and whose innate interests were scholarly. He must be a recognized leader around whom the varied groups of Chicago citizens could rally. During the following week the committee met, and with unanimity the choice rested on Mr. Rufus C. Dawes.

Mr. Dawes Accepts Presidency

Mr. Dawes formally accepted the call to leadership and at the Committee's next session, December 20, he became President of the Organization Committee. At his request, Amos C. Miller was added to the Committee, which then elected Charles S. Peterson as First Vice-President and Daniel H. Burnham as Secretary. The careful, studious thought given to the project by Mr. Dawes and his associates was shown by the celerity of their action during the remaining week of 1927, and by the fact that their accomplishments proved to be not temporary expedients, but permanent fixtures in the Exposition's construction.

As its first step toward establishing a basis of public support for the enterprise, the Committee invited Mayor Thompson, the presidents of leading organizations and representative businessmen to meet with it at the Union League Club on the evening of December 23. Even before the session adjourned it was evident that the Exposition project had gained important allies in its developing plans.

The vital question of financing was the next consideration and Mr. Dawes called the Organization Committee together December 29 for a discussion of this subject. He stressed the fact that adequate money was an immediate necessity for the preliminary organization with the need of more for the launching of a campaign to arouse favorable sentiment all through the Chicago area. The larger financing of the many millions that would be required for the actual enterprise might come later, when definite plans for an exposition could be well defined.

It was at this meeting that Mr. Dawes suggested the principle of the financing of the Exposition entirely from private funds, without solicitation for appropriations from the City of Chicago, the State Legislature or the Federal Congress. The subsequent adoption of this principle gave the Exposition a plan of financing unique in the history of international expositions. Not a penny of subsidy ever was solicited or received from any tax collecting body. The details of this plan and its operation are discussed in a later chapter.

Plan to Test Public Sentiment

To test the strength of public endorsement of the Exposition and to give individuals a personal interest in the undertaking, a fair membership campaign was launched.

Associate or "booster" memberships-at-large, costing \$5.00 each, would be

offered to the public through the Chicago press and civic organizations. Each membership would include a certificate entitling the holder to ten admission tickets to the Exposition. This appeal would be taken to all the people. If the response should prove to be not strong and immediate, then the fact should be faced that the fair would be merely a local celebration of the completion of the century of Chicago's corporate life. If the response should be large, the Exposition then would be in a position to tap great sources of financial support and individual energy for the purposes of the Fair. The members of the committee were unanimous in their approval of this suggestion.

The necessity of legal recognition and of a name for the Exposition was recognized, and these became the fourth and fifth steps taken at this important session of the Organization Committee. It was recommended that application be made for a state charter in the name of "Chicago Second World's Fair Centennial Celebration". A voluntary legal committee recommended that an Illinois charter be obtained for the institution, the corporation to be organized "not for profit".

In retrospect, the year 1928 becomes increasingly important in the life of the Fair. The direction signs placed in that year staked out definite roads, which could be followed, irrespective of later needs. Foundation stones were sought and developed with such studious forethought, keen planning, and productive imagination, that they stood the tests later put upon them.

The charter to "Chicago Second World's Fair Centennial Celebration" was issued by the Secretary of State of Illinois on January 5, 1928.

By its provisions the original incorporators became trustees. They were Floyd L. Bateman, Daniel H. Burnham, Rufus C. Dawes, Oscar G. Foreman, Charles F. Glone, Chauncy McCormick, Ruth Hanna McCormick, Amos C. Miller, Charles S. Peterson, Albert A. Sprague, and B. E. Sunny.

Following several amendments to the charter it was voted that the number of trustees should be ninety-three, to be chosen in three classes to serve respectively for terms of two, four, and six years; that the trustees should be elected by Founder and Sustaining Members, each Founder Member being entitled to twenty votes and each Sustaining Member to one vote, and that the Trustees should elect the officers of the corporation and all members and officers of committees, acting either in formal meetings as Trustees, or by an Executive Committee with ad interim powers. Membership in the World's Fair Organization would be of two classes—Founder Members, who would subscribe \$1,000; and Sustaining Members, with a subscription amounting to \$50.00.

The first meeting of the original Board of Trustees, January 9, 1928, was highly important for it established the executive leadership of the Exposition by the election of permanent officials; Rufus C. Dawes, president; Charles S. Peterson, vice-president; Daniel H. Burnham, secretary; and George Woodruff, treasurer. The next day the trustees selected the Exposition headquarters—a suite of offices in the Burnham Building at 160 North LaSalle Street—and an Exposition staff entered into a program of tangible activities.

During this period the formation of committees was started. Their combined membership formed the nucleus of a widespread civic interest. Meeting in the new headquarters January 18, the trustees formed a legal committee, and on this date also the first bank account was opened in the National Bank of the Republic.

Two weeks later, February 1, the legal committee submitted a draft of by-laws which was adopted by the board of trustees. At this meeting also, Dr. Allen D. Albert was appointed assistant to the president.

The Trustees, on February 8, adopted the draft of a form for founder membership certificates. The time now was come for concrete suggestions relative to the physical setting of the Exposition and a committee on preliminary design was created. At the same time a committee on sports was formed.

At this board meeting the \$5.00 membership drive, suggested by Mr. Dawes as a test of public opinion, was initiated, under the leadership of Stuyvesant Peabody. The first step in the building up of the organization was the mailing of 1200 invitations to civic and commercial bodies in and around Chicago, urging them to appoint delegates to meet with the drive committee to discuss plans for the 1933 celebration.

A mass meeting was held in the Auditorium Theater, March 19, 1928, to which all Chicagoans were invited to come and show their civic loyalty by lending a hand to the Centennial.

The Architectural Commission and Finance Committee

The architectural commission was created on February 21 and it was decided that the selection of the members of this body should not be restricted to local architects but they should be chosen from over the nation, with no restrictions of any kind. From a long list of architects compiled by an impartial group, forty were named. This list was shortened to ten, and finally to five, none of whom was a Chicagoan. These were asked to recommend three Chicago architects.

In March, 1928, President Dawes announced that the following had been appointed members of the Architectural Commission: Paul Philippe Cret of Philadelphia; Raymond Mathewson Hood, Harvey Wiley Corbett and Ralph T. Walker, of New York; Arthur Brown, Jr. of San Francisco; Edward H. Bennett, Hubert Burnham, and John A. Holabird of Chicago. Mr. Bennett was designated to make a general plan of the Exposition grounds. The Architectural Commission held its first meeting in Chicago May 23, 1928.

The financial machinery of the Exposition was set in operation with the creation by the Trustees, February 21, 1928, of the General Finance Committee with Samuel Insull as its Chairman. The other members were Charles F. Gloré, Britton I. Budd, Abel Davis, Joseph E. Otis, George Pick, Daniel Schuyler, Jr., H. L. Stuart, Albert A. Sprague, Clement Studebaker, Jr., and George Woodruff. Its functions were "to develop and submit with its recommendations, for the consideration of the President and the Board of Trustees, a complete general financial plan for the Association; and in general to serve as an advisory council to the president and board of trustees in all matters of finance relating to the Exposition".

Action by the Finance Committee would, of necessity, follow a determination of the scope and plan of the Exposition. Pending this determination, the function of the Committee was largely that of fact finding and comparison, bringing under review all plans which had been used by other fairs of similar character, and suggesting new ones.

The Finance Committee recommended that preliminary expenses be financed by means of Founder Membership certificates and this was accepted as the policy of the Exposition. It also was decided that the proceeds of the \$5.00 popular subscription drive be held intact and not used until the opening of the Fair was assured.

It had become increasingly evident to President Dawes and the trustees that the proposed Exposition of 1933 must be different from any previous World's Fair. It was being cast for a new world. It must have a new note, a distinctive idea, and a new architectural concept.

Exposition's Central Theme

A number of interested people had noted that the entire span of life of Chicago coincided with the most amazing period of progress in the physical sciences and their application to industry. It was a century holding greater advance in this field than all the ages which preceded it. Chicago had received its first charter only five years after the first steam locomotive ran over rails in America.

It was the only city of major importance whose entire life had been passed within this remarkable century, one in which the application of science to industry had brought profound changes in both the economic and cultural structure. The world-wide nature of the progress of that century and the resultant importance of world forces, as well as local ones, in Chicago's development, strengthened the feeling that the celebration of such a period could only be fitting if international in its character and scope.

Out of such reflections, the vision of the new World's Fair grew. On August 28, 1928, President Dawes announced the Exposition's central theme as "the dramatization of the progress of civilization during the hundred years of Chicago's existence."

The translation of the vision into the theme and the theme into the preparation of the scientific exhibits essential to its demonstration was made possible by the cooperation of the National Research Council, an organization of the best scientific minds in the country. Its work is told in a later chapter.

During this period a series of important committees was created: the Committee of Progress through Religion, with George W. Dixon as Chairman; the Committee on Fine Arts, with Chauncey McCormick as Chairman; the Auditing Committee, of which Oscar G. Foreman was Chairman; the Committee on Building and Grounds, and, on September 18, the Executive Committee.

The Executive Committee was to consist of seven members, or more, at the discretion of the President. It was given full power to act between the regular meetings of the Board of Trustees. All other committees were made advisory to

this Executive Committee. By this means a way was opened to eliminate the danger incident to scattered authority and conflicts in plan and procedure.

Support to the activities of the Exposition came from perhaps the most powerful commercial organization in Chicago when the Executive Committee of the Chicago Association of Commerce, on November 30, 1928, passed a resolution announcing its intent to cooperate with the World's Fair.

The sponsorship, by the United States Government, of the Exposition was a matter of vital importance if the celebration were to be international in character and the participation of foreign nations insured. On November 30, 1928, President Dawes informed the Trustees that, as a result of interviews with several United States senators regarding this matter, a bill would soon be presented to Congress.

For months the Enrollment Committee of the World's Fair Legion had been giving wide publicity to the drive for \$5.00 memberships. Eventually 118,773 citizens paid in \$5.00 each for a fair that was still several years distant. The funds received from this source were not used for financing any of the Exposition's operations, but were held intact until the opening of the fair was assured. The actual amount of money obtained, which, with interest, totaled \$637,754, was of less importance than the diffusion of knowledge that a World's Fair would be held in Chicago.

The Exposition's basic organization had now been founded through the President, the Trustees, the Executive Committee and the various committees; the theme and purpose had been evolved; the National Research Council was co-operating; the preliminary financing had been undertaken; and a large block of the public in Chicago and elsewhere was favorably inclined toward the Exposition.

The problem now was to translate nebulous ideas into action. The power was there but it would have to be harnessed to become productive, and a first necessity in achieving this was the centralization of operating control in one place.

Of the importance and seriousness of this step the President and Trustees were well aware, for what was now needed was a permanent operating organization. The office of general manager was established in April 1929, and the writer held it until December 1935.

On the recommendation of a group of influential citizens the name of the exposition was changed to "A Century of Progress."

ORGANIZATION AND MANAGEMENT

There was nothing so unique in the Exposition's work as to require fundamentally different basic organization and management principles from those of any other group of people working together. A difference did lie in the necessity of the Exposition to analyze its philosophy of organization and its methods of achieving its ends in terms of the future instead of developing them normally as traditions. A group of people would be brought together for a short period of intense preparation, a period of feverish activity and then disbanded forever. It must live in the future as it would never have a past.

The deliberate objective of the officers was the thoughtful conception of policies, which could be tenaciously followed, to the end that the Fair would never be dependent upon good fortune nor hopelessly a prey to those ill fortunes, which, from time to time, inevitably dog all places and organizations. It was believed that in the realization of this purpose there would be the Fair's best guarantee against failures.

Selection of Personnel

In the selection of personnel, it was a fundamental belief that no system can be better than the people who operate it, and that the success of any enterprise can be measured by the ability of the leaders to coordinate their endeavors.

Loyalty was recognized as an employee's most important asset, for even an inefficient employee would have some value if his attitude towards his work and his superiors was right. The most capable worker without loyalty is a detriment to any organization. Loyalty, however, cannot be ordered or purchased. It must

be won. It is given only when there is respect for the character and the ability of the superior. Since loyalty is greatest to an immediate superior, sterling qualities of character were considered of paramount importance in the top executives and their principal assistants. The directing staff of a Century of Progress was as fine a group as the author has ever encountered.

Native ability was often given greater consideration than particularized experience, especially in non-professional capacities. It was demonstrated many times at the Exposition that those with a good general background and who were mentally alert could be assigned to tasks quite foreign to anything they had previously done and in a short time could master the details and function efficiently. On the other hand it was often true that men with much experience along a certain line, endeavoring to apply their usual methods to a job with an entirely different set of operating conditions, unwisely drew upon their experience instead of making a minute study of their immediate problem. It is not to be inferred from this that experienced men were not considered valuable. But emphasis was laid on loyalty and native ability as the main factors in the successful performance of work; and if a choice was to be made between a man of this caliber and the experienced man of less mental and moral fibre, it was the policy to choose the former.

A strictly enforced rule was that personnel should be hired on the basis of merit alone. Any effort to secure positions through the patronage of powerful individuals was emphatically repelled. No worker was ever wished on the Fair, because of a "pull", either personal, financial, or political. A high level of efficiency was the natural result of such a policy. Of equal importance was the avoidance of the entanglements so likely to stem from such alliances.

Operational Policies

High morale, essential to a strong organization, necessitates a stability of policy towards employees. They must be backed to the limit when they have performed their duty. They must not be constantly subjected to unexpected and sudden changes in plans and policies. They must be advised of plans and changes as far in advance as possible. When this is done, a feeling of security follows which is one of the best guarantees of efficient work. Knowledge of the unwavering support of those higher in authority is a more satisfactory reward than flowery praise.

Rules and policies cannot be enforced by mandate but only by the desire of those in each echelon of command to carry out the spirit—even when violations could not be detected by those above. Realizing that each worker will follow his leader only as the leader himself conforms to regulations, all heads and sub-heads of departments and divisions were meticulously careful to set an example in this in this respect. Good results ensued from their efforts, a smooth-running and orderly organization, an ease and lack of tension among employees, and a pleasant camaraderie among workers regardless of their official status.

In a complicated organization it is necessary that there be elaborate rules and regulations governing what personnel may do. Inevitably numerous requests

will be received for exceptions to be made, for it is doubtful if there was ever a rule so carefully prepared that an exception is not occasionally merited. This however places a burden of responsibility upon the one breaking the rule. Subordinates should not be permitted to grant favors or break rules that superiors deny. Few enough people have discretionary powers and certainly those at the top are best able to administer such powers. There are few things that cause greater disruption than the granting of special privileges, even when they seem justified, and those unacquainted with the circumstances are likely to question the motives. Moreover, the exception breeds disrespect for the rule itself; and if broken at the top, then it is sure to be broken successively down the chain of command by those without authority to do so. This situation never was a problem at the Fair. Staff members quickly learned to ask questions when doubt crept into their minds. This engendered wholesome respect for the rules which were accepted because understood. As a corollary to this, the staff became imbued with sufficient sense of responsibility and knowledge of consequences to break a rule or regulation when the emergency was sufficient to warrant it.

An organization must be given direction from the top and will quickly reflect the character and methods of its leader. It must feel that there is some responsible person continuously directing its destinies. Yet this presents a nice problem. The leader must exert his own will without destroying the initiative and the self-respect of those under him. Coupled with this is the fact that even a mediocre plan executed with decision and dispatch has a better likelihood of success than the most meticulously conceived plan carried out with indecision and frequent modifications.

The management of the Fair believed that the maximum of efficiency would be achieved when the superior announced to his responsible heads his contemplated course of action and gave each of them the opportunity to express frankly his opinions on its merits. Then, when they had been heard from and their counsel weighed, he rendered his decision and subsequently held his subordinates to its successful completion.

Elements in Making Decisions

Few tasks of the executive are more important than the making of decisions. Cases where a decision has a mathematical solution, or where the results can be assayed accurately within a short period of time on a basis of fact, are infrequent. There sometimes comes to the best of executives, after he has marshalled all his facts and assembled all his arguments, doubt as to whether his decision is the wisest one. If he allows such doubt to develop, it is transmitted by some instinct to his subordinates, who, in turn, react with an indecision of their own. The making of decisions has an important psychological effect on all who administer them or who are affected by them. Accordingly, it is mandatory upon the executive to exercise the utmost care in arriving at a judgment, and, when it is finally reached, to maintain it rigidly unless circumstances of grave importance arise to affect it.

At A Century of Progress decisions took on an importance and complication exceeding those met in normal business operation. The problem was an almost totally unknown one, the experience of previous expositions often being invalidated because the conditions under which they were held were so radically different. Because of the magnitude of the enterprise, dozens of decisions had to be made every day with no chance to test their accuracy or efficacy. In some cases decisions had to be made as far as four years in advance, and if and when they proved inept it would then be too late to change them. When a major decision was once made, it became the controlling influence in dozens of others subsequently made, and the consequences of an error could have been appalling. Care was continuously exercised to avoid permitting personal idiosyncracies or temperament or pride to sway the foundation of the entire structure.

When there is a difference of opinion, the decision should effect a solution rather than a compromise. In a compromise certain factors are given up by both sides and hence neither is completely satisfied. In a solution both sides get what they want, but in the proportion of their desirability and to their difficulty of achievement. It was demonstrated many times at the Exposition that if sufficient energy was expended solutions of the most harassing and embarrassing problems could be found, and a final decision reached which satisfied the various contending viewpoints.

The time element inherent in every decision is an all-important one. Snap judgments are seldom the best, but there comes a time when a decision must be rendered. Situations arise where great rewards accrue by taking instant advantage of opportunities and by striking at the psychological moment. At the Exposition the policy was therefore formulated that if there were a minute in which to make a decision, take the full minute; if there were a day, take the day; if there were a month, take the full month. But the study of problems was to be so expedited that if the anticipated time were shortened by unavoidable circumstances, the decision could still be given promptly. A decision was neither delayed nor given prematurely.

The usual methods of obtaining assistance on a problem for which no ready solution seems apparent are to search the history of similar operations for a precedent or to seek the advice of experts. While the fullest advantage should be taken of both of these methods in the making of any major decision, extreme caution must be exercised in accepting either the apparent verdict of history or the advice of the expert. The experience of history can be accepted only where conditions are practically identical, and this rarely occurs. To accept the advice of experts at its face value, even when the expert is competent and has given an accurate and unselfish estimate of the situation, is courting embarrassment. While a full measure of respect must be given his evidence, it may only be accepted with a clear understanding of its relation to other essential activities. Expert advice may be faultless when applied to the problem on which the expert is an authority; but the proposition submitted to him is so often inextricably interwoven with other essentials that his advice, applying to only the thread of the

skein, is inadequate.

A Century of Progress, like all semi-public enterprises, was the recipient of much unsolicited advice. Some of this was good, and some was completely impractical. Due regard was given to all suggestions, and many were workable and proved of great value. At the same time reservations always had to be kept in mind, because there are those who urge a course of action for selfish reasons, or because they are thoroughly, though erroneously convinced of the wisdom of their advice. Considerable tact is required in meeting such situations, and, although discretion often suggested that the advice be accepted regardless, yet the Exposition pursued the path which its own best judgment indicated as correct. This line of action was sure to elicit criticism, and the management was accused of arrogance. In the long run, however, the course fully justified itself, for when a reputation had been established that there was to be no favoritism and that management and staff were working only for the good of the Fair, even when we made mistakes of judgment, most of our critics forgave us and in many cases became our staunchest and truest friends.

Importance of the Press

While it is true of all enterprises, it is especially true of one which deals with large groups of the public, that the best of friends or the worst of enemies are the newspapers. No small part of whatever success A Century of Progress attained was due to the fine cooperation of the metropolitan dailies and the news services. Over the years, this support was generously given despite the fact that there was no paid advertising from the Exposition. Even during the dark days when a successful fair seemed remote, its activities were fully covered, first because the Exposition was news which was of interest to readers; and, second, because the newspapers believed the Exposition would make a material contribution to the prosperity of Chicago. In order to be worthy of this continued support, and in order to facilitate the work of the newspapers, certain definite plans were made and policies established. Much of this was pure routine such as would obtain in any organization having close association with the press. There were the customary press passes, office space and telephone arrangements which were furnished without charge. But in addition to these technical details, a substantial working arrangement was made with the newspapers without which the Exposition would not have received the fine cooperation and benefit which ensued.

The newspapers were looked upon as collaborators. They knew the Exposition's problems and had its complete confidence. They were given access to officials and information at all times and their time was not wasted with inconsequential stories. In four years of almost constant contact this confidence was never betrayed but once, and that time in regard to a matter of little consequence.

Not infrequently unpleasant things occurred on the grounds or matters arose that might develop into a situation which would be damaging to the Exposition if they appeared in print in the wrong light. The more the Exposition desired that unpleasant incidents be truly represented in the news stories, the more

quickly they called in the reporters and told them the whole story. With their keen intuition and noses sharpened for news, it was inevitable that they would have soon run into these stories anyhow, and perhaps in distorted form. If there had been any feeling on the reporters' part that items of importance were being kept from them, they would quickly have dug up an unfortunate tale, and then being under no obligation other than to print the story as they heard it, could easily have made a bad situation worse. Knowing that they had a full story accurately, as known by the Exposition, they did not have to depend on unsubstantiated reports or stories of those who were unfriendly to the Fair, or who were uninformed.

No member of the staff was expected to do or to say anything which he was not willing to see in the papers—either in pictures or in the printed word. The acceptance of this by the staff undoubtedly saved the Exposition much embarrassment. As with all large enterprises, rumors, many of them disparaging, sprang up like mushrooms. Immediately some reporter would receive a tip on what seemed to be a "good" story. Instead of rushing into print, he would give the Exposition an opportunity to explain its position. Since any accredited reporter was at any time shown the original of any contract, bid, or agreement, and allowed to see a copy of the balance sheet or any other pertinent data he desired, and this without reservation or quibbling, the facts of the case governed.

Another problem arose because of the fact that reporters must confine themselves to actual news. If, therefore, a reporter desired to have an opinion expressed he would seek a quote from someone in authority, as matters of speculation or probable consequences could be dealt with only in this manner. Obtaining a quote is often more difficult than it appears. First, the authority must be reached, sometimes a matter of telephoning, perhaps in the small hours of the night. Time is consumed in obtaining and preparing the quote, and there is always the uncertainty as to whether it will be correctly understood over the telephone. Therefore, those reporters who were regularly assigned to the Fair were kept constantly informed on how the authorities at the Exposition were thinking, and knew full well, through attendance at many conferences what the management's point of view was on many subjects. Carrying it still farther, their familiarity with the management's principles and methods of operation, enabled them to deduce what the reasoning of the authorities would be in connection with matters which might never have been discussed before them. Consequently, those reporters who were regularly assigned to the Fair were given the authority to quote the general manager without first obtaining permission, and, during the entire duration of pre-fair and fair activities, never once was this privilege abused. As a matter of fact, the quotations were less likely to cause embarrassment when they were prepared by the reporter than in the usual way. With their background the reporters were able to write a quotation themselves as accurately and usually in more readable form than if it were given in person. Moreover, they watched the rewrite man to make sure it was not garbled in pagination.

Service to the newspaper photographers was another element which merited

consideration. As a rule, they work under the most difficult conditions of light, positions, and time. But not infrequently in their zeal to get the pictures, they irritated the subject and disrupted ceremonies. Conscientious effort was made at the Exposition to remember the problems these men were facing and help solve them. It was realized that if some time and thought were given in advance and every facility put at the photographers' disposal, not only better pictures, of extreme value to the Fair, would result, but a large percentage of the irritation would be avoided.

What applied to the newspapers, applied in a large measure to the radio and the news-reels, and, while their spheres of activity were quite different, their friendship and cooperation were equally valuable, and the Exposition endeavored to be ever alert in its efforts to understand their problems and to meet them satisfactorily.

Early Organization

A Century of Progress can lay no claim to having developed a new type of organization, or especially startling methods of routine operations. Each step was taken as the need arose, from a handful of employees wondering what a world's fair was all about, to a large and complex organization working at a feverish pace on thousands of specialized tasks.

During the early stages, an individual office was set up for each separate activity, all reporting directly to the General Manager. Though it would have proved impractical in the long run, the practice served effectively during the experimental period, and had the additional advantage of leaving little framework to tear down when the permanent organization plan was to emerge.

An early decision was made to avoid the conventional organization charts with regimented squares for which individuals must be found and into which they must be fitted. The rapidly changing organization had to be kept flexible and a chart would have made for rigidity. But more important was the feeling that the management, rather than the inanimate and inflexible lines of a predetermined chart, should run the Exposition. Contrary to the customary formula of beginning from the bottom and going up, the Exposition started at the top and went down.

Centralization of Authority

Before an organization could be developed, the necessity of acquiring a complete picture of the whole undertaking was recognized. Those who labored so long and faithfully over the history of the San Francisco Fair of 1915 would feel amply repaid if they knew the great assistance which that history gave in the working out of this objective. The five volumes were read with the greatest care. Notes of all the important items were made on a roll of paper which reached a length of thirty-five feet by the time the task was accomplished. Each item represented a piece of work which either had to be done or on which some decision was required. Related items were then grouped, and an estimate made of the approxi-

mate date when each operation must be started to assure its completion on time.

When this was completed, a basis for a budget had been laid, a priority schedule had been formulated, organization possibilities had been clarified, and the foundations for the various departments established.

The arrangement of groups which had been made was then checked against the existing organization. They did not mesh. Therefore all existing departmental lines were done away with and every function thrown into the General Manager's office, later to be paid out to the responsible units. This arrangement had many advantages. With everything centering in the Manager's office, it was possible for him to learn a situation rapidly, to know his personnel and their capabilities, and to explore the past, present, and future problems of such an organization. The centralization of all functions served two important ends. It prevented individual tangency and promoted teamwork. It also gave the General Manager an understanding of details which was later to stand him in good stead and assist in making the quick decisions which as time passed and tension grew, became more and more imperative. Only two of the operating functions remained there from first to last and never were delegated. These were approval of expenditures and the signing of contracts.

One of the cardinal considerations as the organization began to take shape was the establishment of specific departments. Through the interested cooperation of Britton I. Budd, the services of S. P. Farwell of the Business Research Bureau, an expert on organization, were given the Exposition. Until the organization had been perfected to the point where the staff itself was representative of all the types of experience required, that organization ably provided such perspective.

The system of early centralization and subsequent decentralization proved fundamentally sound, though it had its drawbacks and had to absorb many shocks. Many situations were critical and changed so quickly that it was often impossible to keep the organization units advised of them immediately. These circumstances dictated the making of decisions in the General Manager's Office which would have been and were later made elsewhere in a normal routine of operations. The departments recognized this necessity, but it was a necessity not easy to live with day in and day out. Then, in order to avoid every item of expense possible, the organization of departments was delayed longer than was desirable, thus creating a bottleneck in the transfer of functions. The patience of department heads went far in alleviating the effects of the drawbacks.

Departmental Organization

Eight departments and two boards were eventually organized between 1930 and 1933; Works, General Service, Exhibits, Concessions, Promotion, Secretary's, Comptroller's and Operations and Maintenance. The last, which superseded the General Service Department, was the last to get under way, and its creation was an innovation in World's Fair organization.

The function of the Works Department included the handling of all matters relating to general layout; the design and construction of buildings, roads, walks,

bridges, and other structures, or, if the work was done by contractors, the supervision of it; the providing of landscaping, sculpture, fountains, general and special illumination, and other decorative effects; the granting of permits for and inspection of all connections to utilities, performed by or for exhibitors or concessionaires whether in exhibit buildings or elsewhere; the demolition of structures and rehabilitation of the grounds upon the close of the Exposition; the supervision and inspection of all buildings on the Exposition Grounds; and the administration of the Building Code.

Months before Daniel H. Burnham left his own offices of Burnham Brothers, to come on the full time staff, he functioned as Director of Works. His genial personality, his close personal associations with the development of Chicago, his ability and abiding interest in the exposition project, made his tenure of office successful, even though it covered the Fair's most trying period from a construction standpoint. Mr. Burnham's immediate assistants were Clarence W. Farrier from Bennett, Parsons and Frost, and John Stewart of Black, McKenny and Stewart. Their creative and administrative ability made themselves felt in every construction program. Mr. Farrier was transferred to the Operations Department and Mr. Stewart succeeded Mr. Burnham as Director when the latter's personal interests dictated his resignation. Mr. Stewart's driving powers were largely responsible for the phenomenal construction accomplishments of the last pre-fair weeks.

The duties and responsibilities of the General Service Department were so varied, so multitudinous, so necessary as almost to beggar description. Perhaps this department could be best described as that which had no end of its own but without which no other department could function. Long before the remaining departments were organized, the General Service had delved into many vital activities and had been the experimental laboratory for the rest of the organization. Its functions were designed to include the development and maintenance of the personnel section; provision for services such as files, messenger, mail, information, library and research, duplicating, central telephone, janitor, restaurant and maintenance of office property; the receipt, storage, and issuance of materials and supplies; the maintenance of trucking and delivery service; the purchase of materials and supplies; and serving as liaison with such utilities as were housed at the Exposition for the benefit of employees but not a part thereof.

The administrative functions in the General Service Department were under the capable guidance of John C. Mannerud, whose long previous service as general manager of Carson, Pirie, Scott and Company's wholesale establishment eminently qualified him. The Fair was fortunate in having here a man of high integrity, good judgment, and indefatigable industry.

The establishment of the Personnel Office was one of the early and important activities of this Department. Perhaps nothing is more important to an Exposition than the selection of its personnel. It may be said that this is true of any organization or enterprise. But it is doubly true of Expositions, because they must have a fast-working flexible personnel, and also because the time in which the work is to be done is so limited that labor turnover is more serious than in



Avenue of Flags.

Site of Hall of Science.





Skyride Dominated Chicago's Evening Silhouette.

Panorama Northward from South Entrance.



organizations which carry on indefinitely. With thousands of people seeking employment at A Century of Progress, this office under the direction of Jay Tomlin constituted one of the Exposition's chief contact points with the public, and the attitude and policies maintained there helped to form much of the public impression of the entire enterprise. All applicants filled out forms which were kept in the current files for three months. At the end of this time, if the applicant had not been employed, his card was removed from the active file. Although it was customary for the person responsible for the work in question to interview a number of applicants and select new employees, all the preliminary negotiations, selections and the actual employment were handled by the personnel office.

It soon became evident that a centralized file was needed as the various offices were maintaining their individual files, and the inconvenience of such an arrangement was obvious. Accordingly several weeks were spent visiting different companies and inspecting their filing systems. The results of these inspections were typical of the problems which the Exposition faced constantly—none of these filing systems exactly filled the Exposition's need. So pioneering work was again in order. The Exposition, profiting by what it had learned from other systems, drew out again its 35 foot list of things to be done and organized its own filing system adequately fitted for the special work of such an undertaking. The burden of this task was capably borne by Myrtle V. Wesenberg.

The problem of supplies and purchases was another question that came early to the front, calling for close attention. At first the issue of supplies was confined to bare necessities and the purchases were so few that they were performed as an adjunct to another office. As the need for it quickly developed, a Purchase Office was established under George Hodgins with a separation of purchase and supply functions and the definition of a group of policies which were kept with practically no changes throughout the entire period of the Fair.

In accordance with these policies no member of the staff was permitted to make purchases directly, however small, as requisitions approved by Department Heads and the office of the General Manager were required as authority. On receipt of the approved requisition, the materials were ordered by the Purchase Office and the bills checked by the Comptroller. So many hands thus held the papers, that the possibility of collusion and wrongdoing was practically eliminated. In general three or more bids were invited on everything purchased, with the award to the lowest satisfactory bidder. All purchase orders were approved by the Purchase Office and mailed to the successful bidder, copies of these going to the receiving depot, the accounting department and the office requiring the purchase.

Standard purchase procedure was varied in many cases because of the policy early adopted by the Exposition of obtaining as large a percentage as possible of its merchandise and service in exchange for A Century of Progress Gold Notes. One hundred and twenty-one merchants, contractors, and suppliers accepted a total of \$2,355,000.00 in notes for material and services. Great care was exercised to assure that no premium was paid to those who took notes instead of cash. It was a fundamental consideration that the bonds must pass at par. When the

notes became exhausted, deferred payments were obtained which provided that the goods should be delivered during the pre-fair period with payment therefore at intervals throughout the operation of the Exposition. Some were secured by promissory notes, while others were open accounts. Such deferred liability agreements were entered into with one hundred and twenty-seven companies to the value of \$1,748,536.74. Purchases for cash were infrequent and in comparatively small amounts.

The Exhibits Department, established in 1931, was charged with the sale of exhibit space, the planning and installation of all exhibits, the handling and return of all domestic and foreign exhibits, the cooperation and affiliation with local agencies available in connection with the exhibits, the preparation of catalogs and publications related to exhibits, and the protection of exhibits.

The Exhibits Department had three different directors. First was Admiral L. E. Gregory, former Chief of the Bureau of Yards & Docks, of the Navy Department. Ill health of Mrs. Gregory brought about his retirement in a few months. Colonel John S. Sewell gave up his position as president of the Alabama Marble Co. to become the second Director. It was a cruel blow when Col. Sewell's health failed, mitigated only by the able way in which his assistant, Charles Walton Fitch took up his duties and led the department through its most troubled days. Assisting Mr. Fitch were W. H. Raymond, who came to the Fair from Armour & Company, bringing wide business experience and knowledge, and Capt. M. S. Daniels, Jr., of the U. S. Army, whose death shortly after the Fair brought to the entire staff a sense of keen personal loss.

In September of the same year the Concessions Department was organized. Its functions included the handling of such features not assigned to other departments as might be operated for profit by the Exposition itself, and those on a concession basis. After studying the concession histories of other fairs, where difficulties had been so acute, it was obvious A Century of Progress must find exactly the right person to head this activity. Tradition was broken in that a scientist was chosen. The man was Forrest Ray Moulton, whose brilliant achievements and long association with the University of Chicago need no amplification here. Be it said that no one could have done a more courageous job. Milton P. Kerr, who had demonstrated his integrity, resourcefulness, and energy as Assistant Comptroller, was transferred to the Concessions Department as Assistant Director.

The functions of the Promotion Department, as established by official order in February 1932, included the handling of all matters pertaining to the gathering and disseminating of public information in regard to A Century of Progress both in this country and abroad. This included the press, periodicals, pictorial displays, radio, moving pictures, lectures, and various other forms of publicity and promotion. The Promotion Department began its departmental existence under the first Assistant Director, Norman Gregg. E. Ross Bartley, who had been dean of the White House press correspondents in the Harding Administration, and later secretary to the Vice President of the United States, was chosen as

director of promotion. There was no better loved man associated with the fair.

The Comptroller's Department, officially inaugurated in September 1930, had previously functioned as an accounting office, and now handled all financial transactions, in which were included the duties of collection, control, auditing, accounting, insurance, and the budget, as well as the advance ticket sale. Throughout the early days Mr. Kerr, at first as Office Manager and then Assistant Comptroller, headed the financial office. The appointment of Mr. Martin Tveter as Comptroller was the signal for intensive work on the structure for revenue control.

How well the work of this office was done is evidenced by the fact that, out of over two hundred million dollars handled, there was less than two thousand dollars discrepancy, including charges for counterfeit money inadvertently taken by cashiers.

The Secretary's Department, established in January 1931, recorded the minutes of the meetings of the Corporation, the Board of Trustees, the Executive Committee, and Standing Committees; acted as custodian of all official records, including the corporate seal; signed with the President or General Manager all contracts; was responsible for the issuance and regulation of all passes; and investigated and recommended action in any matters involving unauthorized use of the corporate name of "A Century of Progress." Patrick J. Byrne succeeded D. H. Burnham as secretary. It was Mr. Byrne's privilege to be both the first and last paid employee of the Exposition.

The Operations and Maintenance Department was organized in April, 1932. Aside from the assumption of the functions of the General Service Department its responsibilities included the operation and maintenance of all buildings, utilities and matters pertaining to public safety and welfare; the handling of traffic in the grounds; transportation systems; the handling of freight and express transportation; the operation and maintenance of all buildings and property of the Exposition; the conduct of all matters connected with the concessions, aside from the determination of the "fixed charges" mentioned in the concession contracts after a temporary permit of occupancy had been issued; and the handling of all aliens employed upon the grounds under the immigration laws. Col. Robert I. Randolph's distinguished record in the service of Chicago, as President of the Association of Commerce and in connection with the Secret Six made him an ideal choice as Director of Operations. His major assistants were Clarence W. Farrier, transferred from the Works Department, John C. Mannerud from the General Service Department, and Commander H. D. Nuber of the United States Navy. For twenty-four hours every day, this quartet was responsible for the major direction of the operating period.

While never part of the Exposition staff, two groups were organized upon the grounds that worked in close harmony with all the staff units. These were the Exhibitors' Association, under the farseeing leadership of Edward H. Sniffen of Westinghouse, and the Concessionaires' Association with able and vigorous Robert Eitel of Old Heidelberg as its president.

It is interesting to note that the tentative organization scheme set up in 1929 was followed with but two exceptions. It was originally thought that "Events" or "Special Features" would function best as a separate department, but in the interest of economy these functions were later allocated to the Operations and Maintenance Department. It was also intended that the treasury functions would be separate from the accounting functions, but again in the interest of economy, both functions were placed under the Comptroller.

Coordination of Departments

The coordinating function among all the departments was performed by the General Manager. This task was made comparatively easy by the fine attitude of department heads. It was a rule never to alibi or let their staffs do it. They kept themselves clear of entangling details so they could look clearly ahead. They kept under control those trivial personalities that could have resulted only in damage to the Fair. As fast as policies and procedures were settled upon, they were circulated among the staff in the form of office orders. There were three classes of orders: (1) executive orders which were used by the General Manager for setting up of the organization; (2) general orders, issued by the General Manager to set forth either matters of policy or the detailed procedure which applied alike to every member of the staff, no matter where assigned; (3) departmental orders, issued by each department head to the members of his own department and in many cases containing detailed instructions as to how to carry out the executive and general orders.

In order to emphasize teamwork, and to give newly organized departments the experience of the older ones, all orders regardless of their point of origin, were circulated from the office of the General Manager, and no order became effective until it was on file in his office.

The usual procedure was to call together representatives of each department interested in the subject on which instructions needed to be issued. A proposed rough draft was drawn up, circulated for comment, revised and issued after differences were ironed out by the General Manager. There was then no trouble in enforcing the order because its contents had been thoroughly threshed out and its purpose well understood.

Orders were held to a minimum and before issued were screened by four tests. (1) Will it be understood by the recipient or recipients? (2) Will I obey it myself? (3) Will I take the trouble to check that it is obeyed? (4) If not obeyed, am I willing to take disciplinary measures to assure compliance? Unless "yes" could be answered to all four, the order remained unissued. Actually, the loyal cooperation of the staff in endeavoring to carry out the intent of a directive made direct orders seldom necessary. This was facilitated by keeping all key members of the staff constantly apprised of all developments and circumstances. Daily staff luncheons and dinners presented an excellent opportunity.

Management during Operation

With the opening of the Fair, many new and vexing problems arose. Some were the same that confront every corporation; others were native to A Century of Progress. Among the former, the most troublesome arose when lines of communication broke down between the Administration Building and the Ground units. An example was the never-to-be-forgotten opening day.

Rain during the last days of construction had been so continuous that it was impossible to use mechanical trench diggers for the installation of telephone lines. The trenches had been dug by hand and, with the opening day advanced to May 27th, the communication service was far from perfect. The switchboard broke down completely, and, in addition, the inter-office telephone service went out about an hour after the opening, due to the overload placed upon it.

The operations personnel on the grounds had had only two days experience in working together as a team, and a lack of practical knowledge by which to steer a course worked to considerable disadvantage. There was a round of complaints from tardy exhibitors and concessionaires because cars were not admitted to the grounds; queries from the gates, the public protection sections, the pass office, and the information desk as to what was the policy on this or that. Few of the questions had been anticipated. One minute it was whether to allow dogs on the grounds, and the next it was what to do with baby buggies.

On the spur of the moment instructions were given to permit dogs on leashes to be admitted. The next day two dogs on leashes fought, entangled a woman in their leashes, threw her against a lamp-post and broke her shoulder. After that, dogs were barred, but people who had previously brought their dogs in complained bitterly the next time they came. Then there was the woman who appeared at the office at two o'clock in the morning, half hysterical because the Sky-Ride power cable had severed about midnight and left her stranded in rocket-car "Madam Queen" over rocks. She would not have minded, she explained, if it had been over water or land, but rocks were just too much.

To meet these operating exigencies, the general manager's office was kept open for twenty-four hours a day and was adequately staffed to handle all emergencies expeditiously. The General Manager seldom left the grounds during a period of six months, having living quarters adjoining his office.

From first to last, Col. Frank C. Boggs and Miss Martha S. McGrew served as technical and administrative assistants, respectively. No amount of praise expressed in this book would adequately convey the high order of their service to the Exposition. Suffice it to say that their contribution to its success was second to none.

Some of the most important events are not recorded in this chapter. The things which did not happen were quite as impressive as the accomplishments. There were no hold-ups; no riots; no embezzlements; no forgeries; no serious fires; no pestilence; no counterfeiting of tickets; no strikes other than jurisdictional; no lawsuits deriving from contractual relations; no claims by contractors for extension of time; no political interference; no structural failures; and no catastrophies.

FINANCES

No phase of the Exposition's varied activities was more dramatic than that of its financing. Reduced to mere words in a story of the exposition, and to cold figures, it loses the suspense, the thrill, the travail, and the satisfaction which attended this most critical of operations. In many aspects it was unique. Not one cent was sought or obtained from any tax-paying body, in the form of a subsidy or gift. The principal financing was accomplished in the depth of the worst depression the country had known, and the Exposition was held during the years when the nation was slowly struggling back to recovery.

Yet the miracle happened—every debt was paid in full, including a million and a half dollars in interest on the Gold Note issue. Moreover, when demolition was completed there remained a surplus which was distributed to institutions which had assisted the Exposition. Other American fairs had received substantial subsidies from government agencies, but they had been able to pay off only a few cents on the dollar, either on their incurred indebtedness or to those who had subscribed to their bond issues.

Early Financing

The initial financing of the Exposition was obtained through the sale of Founder and Sustaining memberships at \$1,000 and \$50 respectively. Early in 1928 when a preliminary organization was being formed, an active committee, under the leadership of General Abel Davis, set about raising funds for its maintenance. Great credit for the ultimate triumph of the Exposition is due these pioneers who first believed in the success of the enterprise, and who gave

their money as a contribution without thought of return, other than being able to deduct it from their income taxes. And, as might be expected, it was these same men and women who later rendered many invaluable services. The \$271,400 received from these memberships carried the operating organization through its first year.

About this time, another undertaking was launched, first known as the "World's Fair Boosters" and later changed to "Chicago World's Fair Enrollment Committee." Its outward purpose was to sell \$5.00 Legion Memberships to the general public, these to be exchanged for ten admissions when the Fair opened, but its real function was to enlist the active interest of a vast number of citizens in a project which required public support to be successful. A city-wide network of offices was set up and solicitation was carried not only to individuals, but through large industrial organizations, foreign language groups and civic clubs. It was eminently successful in making Chicago conscious of a Fair which was still five years off. To Colonel Stuyvesant Peabody, and his many capable assistants, goes the credit for the raising of \$637,754.35 (with its accumulated interest) through the sale of 118,773 memberships.

The money received from these memberships was held as a trust fund, not to be used until the gates were ready to open; thus, if the Fair had to be abandoned, every cent might be returned. This money later came under the terms of the Trust Indenture which provided that forty percent of all gate receipts should be deposited with the Trustee to be used for amortizing the Gold Notes.

Having accomplished its primary purpose of advertising the Fair, the campaign for the sale of certificates was discontinued in May of 1929. Actually, money was being borrowed from the National Bank of the Republic at this time to keep the organization going, and the Fair found itself in the awkward position of spending money it did not have to get money it could not use!

The possessors of these memberships were justly proud of their certificates, and their attendance did much to stimulate the crowds in the first weeks that the gates were opened—of primary importance in stimulating later attendance.

The Guaranteed Gold Notes

May of 1929 found the finances of the Exposition at their lowest ebb. All the monies received from the founder and sustaining members had been expended, the Legion membership fund was safely impounded until 1933, and our credit with the bank was stretching to the breaking point.

Two separate committees had, one after the other, studied the situation and sought some plan for the major financing of the Exposition, only to report that they had nothing to offer. The situation was desperate. An appeal was made to Gen. Charles G. Dawes, then the Vice-President of the United States, and his response was undoubtedly the outstanding contribution to the financial success of the Exposition. If he had not found time from the pressure of his public duties to organize the drive and almost lone-handed to carry through the securing of guarantors and subscribers to the Gold Notes, there would have

been no Exposition.

The plan adopted was one proposed by the Treasurer, George Woodruff. It contemplated an issue of Gold Notes to be guaranteed by 40% of the gate receipts, and further secured by the pledges of individual guarantors in an amount greater than the issue. \$10,000,000.00 in bonds were to be issued in various denominations, bearing coupons paying 6% interest and maturing on October 15, 1935.

The Board of Trustees formally authorized the issue of Gold Notes on October 28, 1929. In the Trust Indenture to the Central Trust Company of Illinois were specified the terms and conditions which, among other items provided that any individual guarantor might be relieved of his guaranty by purchasing Gold Notes up to the amount of his guaranty. Notes so purchased would be stamped by the Trustee as not secured by the other guarantors though, of course, they retained the protection of the forty-percent-of-the-gate-receipts clause.

As brilliant as was the concept of the plan, it was to meet its first test when an attempt was made to secure the guarantors. In a whirlwind campaign General Dawes secured \$12,176,000 in signed guarantees. As with most things which are successfully prosecuted, he began with himself, personally pledging a large proportion of the total secured. Mention must be made of the large pledges made at that time by Mr. Julius Rosenwald and Mr. Samuel Insull.

These preliminary steps, while essential, did not produce cash, so during the summer and fall of 1929 active steps were taken to sell the bonds. Again General Dawes took the initiative and in a two-fisted drive disposed of the initial large blocks of bonds. Subscriptions of \$6,610,000 were received from guarantors, and \$912,700 from others. It will be recalled that the great break in the stock market occurred in October of 1929. To dispose of securities in so nebulous and uncertain an enterprise as a World's Fair, still four years off, during days when personal fortunes were toppling and when prospects of a chaotic future were ahead, called for salesmanship and faith of a high order. The brave ones who purchased Gold Notes at this time little realized it was one of the few investments they could have made which would pay off in full with six per cent interest. They deserved their good fortune.

The subscriptions provided that a call could be made for the entire amount or, as was actually done, for parts, to be paid by the subscriber on thirty days' notice. The first call for 10% was paid on February 1, 1930 and amounted to \$612,500. The remaining nine calls were made at intervals of about three months, the last one being made on October 15, 1932. A total of \$5,999,200 was received in the ten calls.

To assure the prompt payment of their subscriptions, many subscribers set aside other securities. The depression caused these to drop to a small percent of their original value. In spite of this and many other difficulties inherent in the times, only \$610,800 was not paid promptly on call. Even this was somewhat offset by subscribers who took \$683,000 of Gold Notes in advance of the calls.

The first call liquidated the \$325,000 which had been borrowed from the

bank and provided working funds for corporate purposes. From this time until the opening of the gates, no further borrowings were made. The Fair was on a strictly cash basis.

Though many additional millions were going to be necessary to complete an Exposition of minimum scope, it was realized that little more could be expected from individuals, and that many other sources of income would have to be explored and developed. The hundred and one ingenious ways in which these monies were raised is the epic of the Exposition. Some of the major items are here described, but space will not permit telling of many which were most interesting and unusual. Let it be said that the general depression assisted rather than hindered the later financing. A department store took gold notes for laying wood floors and a mail order house drove piles in the lagoon. The revenue made important additions to their sagging income statements.

A story of how the depression helped in construction may prove illuminating. The low bid for a large concrete job was just one-third of the estimate made by the Exposition's engineering department. The contractor was called in for an explanation, as the Exposition could not afford to have a stoppage of work due to bankruptcies or errors in estimating. The contractor explained that he had a warehouse full of cement which was rapidly deteriorating and, while it could be used on the sand foundations at the Exposition, it could not be used in high construction. Mountains of sand and gravel had been standing untouched in his yard due to the cessation of building construction. His machinery was rusting and would be ruined if not used. His foremen and principal workers were already being carried on his pay rolls, though they had no work. He almost convinced the Exposition authorities that it would be a privilege to do the work for nothing. He got the job.

The Budget System as Inaugurated in 1929

As contradictory as it may seem, the budget was the extreme of both rigidity and flexibility. This was because certain precepts, adopted early in the construction period, were adhered to faithfully. They were summed up in the axiom, "We intend to open the gates, not the sheriff."

It was not certain until the very end how extensive the Exposition would be, for its size was to be determined by the available funds. Neither commitments nor purchases were made until the actual cash was in hand to pay for them. Prospects of income, no matter how bright, were never considered valid.

The havoc of the depression on personal fortunes and the skepticism of many important individuals as to whether the Exposition would ever actually open created a situation where some expected funds failed to materialize.

Further confusing the problem was the fact that many irrevocable decisions had to be made months, and even years, before the gates were to open. These factors combined to make necessary a budget control that was absolute, with nothing being spent unless specifically provided, yet the entire budget was often recast several times in a week.

One illustration, out of hundreds of examples, will indicate the complexities of the situation and how they were met. The water supply lines for drinking, fire, and sanitary purposes, had to be installed under ground before the building program was too far advanced. Sound engineering practice dictated a loop of pipe around the entire grounds, so that in case of a break in the thin walls of the temporary piping, it could be valved off at both sides of the break, and the grounds supplied by pumping water both ways up to the damaged section. A dead-line date was set when work must start if it were to be completed on time. The drawings were ready and the contractors' bids in hand, waiting for the zero hour. This coincided with the date of the next call for payment on subscriptions to Gold Notes. Chagrin reigned supreme when we were notified that two hundred thousand dollars, considered definite, could not be paid. The laying of the pipe had to begin, but there was no cash on hand to pay for it—a seemingly impossible dilemma if we were to hold to our precepts.

But a solution was found. Over the protests of the engineering department the loop system was scrapped and a single line ordered put in which could be paid for with the funds on hand. The fire hazard was covered by building ramps close to the water's edge, where fire engines might drop their suction hose into the waters of Lake Michigan. A cross connection made to the city supply system at the far end of the pipe, with the valve closed except during emergencies, satisfied the sanitary requirements. The whole incident was a blessing in disguise, for, unorthodox as it was, it functioned perfectly and saved nearly a hundred thousand dollars.

So, while the budget was absolute for administrative items, for construction it was more in the nature of a program. Each day there was submitted to the General Manager a statement showing availability of funds and the projects for which provisions were still to be made. As soon as authorization was given the entire cost of the project was immediately deducted from available cash and set up in a separate account.

To assure the integrity of the use of funds, other separate accounts were established. Funds from space sold to exhibitors in exposition buildings were segregated for use on that structure only. The later buildings, such as Agricultural and General Exhibits, were designed and built to conform to the space actually taken by exhibitors, with provision for subsequent enlargement if the demand developed. Sometimes their space fees were received a year before the building was started. During the interim, the money was not intermingled with corporate funds, but was kept in separate trust accounts for each building.

This sound financial policy became known to contractors and local bankers, and, despite the continued pessimism of some distinguished citizens, including some able bankers, the credit of the Exposition increased to a point where all needs could be met.

Sale of Exhibit Space

The policy of previous Expositions had been to give space to exhibitors for

competitive displays, and award medals and ribbons to winners. All this was changed at A Century of Progress. It was believed that the endless repetition of competitive products did not make for public interest. Also, if a substantial fee was paid for space, the exhibitor would value it more highly and accordingly produce a better exhibit. So the decision was made to sell space, eliminate competitive awards, and guide displays to cover different phases when in the same field. Exclusive privileges would be granted where this seemed best to fit the needs. All this was decided before the financial stringency developed, but it was most fortunate, for the sale of space in the Exposition's own buildings amounted to \$3,000,000.00.

To sell space during a depression was a problem in itself, but to obtain payment literally years in advance called for real ingenuity. Space in many of the buildings was sold while they were still in blue-print form.

Before the foundations were laid for the Foods and Agriculture Building and for the General Exhibits Group, \$600,000.00 had been received from exhibitors. In a number of cases, the full price of the space was paid two years before the building was started. Besides giving the Exposition the cash in advance for the construction, it had the added advantages of permitting exhibitors to make interior alterations on the plans and of giving an accurate measure of how large a specific building should be.

The rules and regulations for the sale of exhibit space were carefully developed and were ready early in 1931.

The basic price for space was fixed at \$10.00 a square foot, which, when aisles and utility space were deducted, represented the average cost to the Exposition for construction. To induce exhibitors to pay the full rental price in advance, a cash discount of three-fourths of one per cent per month was allowed. Many took advantage of this discount. The others were required to pay 5% with the application; 20% at the time space was definitely allocated; 25% on September 1, 1932; 25% on February 1, 1933; and 25% on June 1, 1933.

A discount of 10% was allowed from the base price to exhibitors filing application for space prior to December 31, 1931, and 5% to those filing between January 1, 1932 and June 1, 1932. No discount was allowed for purchases after the last date.

There was no ground rent to exhibitors who constructed their own buildings. Utilities were brought to the boundary line by the Exposition authorities but, from there on, all construction was at the expense of the exhibitor. The space charge in the Exposition's own building was designed to amortize its cost, so it became financially immaterial whether an exhibitor built his own structure or rented space in one belonging to the Exposition.

The history of concessions in previous fairs had not been a happy one. Many had been forced to close through lack of income in the early months after opening. Bankrupt businesses and darkened show fronts do not lend to the carnival spirit of a Fair. The knowledge of previous disasters, coupled with the difficulty of concessionaires in raising enough money to build creditable rides and shows,

caused A Century of Progress to take a generous position, even though it was designed to be for the best interests of all concerned eventually. The general policy was to make little or no space charge, and permit the concessionaire to keep *all* of his take until his original investment had been amortized. Hence concessions were not a material help in solving the financial problem in the pre-fair period.

Advance Ticket Sales

A substantial source of pre-fair income was evolved from the advance sale of admission tickets, though there were collateral advantages which were equally important. Books of single admission tickets and season tickets went on sale in December, 1932, and by May 26, 1933, there had been 2,342,155 single admission tickets and 3,858 season tickets sold, the total proceeds of which amounted to \$966,237.18. Of course, 40% of this was deposited with the Gold Note Trustee under the Indenture, but 60% was available for construction and operation.

It seemed inconceivable to the Exposition authorities that any skepticism should remain in January of 1933. They saw the acres of buildings nearing completion and knew that there was enough cash on hand to open the gates on schedule time. But many in metropolitan Chicago were certain that the Exposition would be postponed or would open unfinished, or even would be abandoned at the last minute. Some of these disbelievers even spread their doubts at out-of-town conventions, causing exhibitors in distant cities to call up and frantically inquire if all were well.

The advance ticket sale did much to allay these fears. With hundreds of thousands in the possession of citizens, they wanted to believe the Fair would open. When important corporations investigated and purchased large blocks of tickets, it did much to hush the doubting Thomases, if not convince them.

Previous fairs had suffered badly from a small attendance in the first two months. Even the great Columbian Exposition of 1893, which eventually broke all attendance records up to that time, was so poorly attended in the opening weeks that by July many concessionaires closed their doors and moved out, and the Exposition itself was threatened with closing, as even operating expenses could not be met.

It was believed, if a substantial *early* attendance could be stimulated, and if the Exposition merited praise, that the word-of-mouth publicity of those who came first would have a profound influence on a successful outcome. This is actually what happened, and in no small amount was due to the advance ticket sales, which, when combined with the holders of Legion Membership tickets, put 3,399,919 tickets in the hands of the public before opening day. The psychology of having a ticket in hand did much to overcome the natural inertia of many to come early and often. For having come once, they quickly made attendance a habit.

Gold Notes Finance Construction Program

By the summer of 1932, there still remained unsold nearly \$3,000,000.00 worth of the original issue of Gold Notes. The depression had so depleted private fortunes that sales to individuals had virtually ceased. However, many corporations still had substantial cash reserves or materials in stock, and had little use for either.

A number of concerns were approached with the proposition of accepting Gold Notes for construction work, services, and merchandise. The plan was eminently successful, and \$2,581,400.00 of notes were so taken by contractors and suppliers.

Where notes were traded for goods, it was specified that the notes must be accepted at par and the full regular discount allowed the Exposition. For services, notes were given to low bidders as though on a strictly competitive cash basis. In other words, not one penny of discount was given on the notes and no brokerage fee was paid to anyone in connection with the sale and disposal of any part of the note issue.

While Gold Notes were being sold to others, the staff expressed its belief in their security by subscribing to \$309,500 of them. Every employee took part of his or her salary in notes, and many took as much as half. This entailed many personal sacrifices, but inspired confidence in others.

As the last of the Gold Notes were being used, the credit of the Exposition reached a point where contractors offered to perform work for unsecured notes, or by carrying the liability on open account. Over \$1,800,000 worth of work and materials were supplied on this basis.

It was here that one of the most heart-breaking decisions of the Exposition had to be made. There were many things still desired; more trees and landscaping; more elaborate illumination; more decorative items such as fountains, statuary groups and incidental buildings. *The credit was there to get them.* At least another million dollars was offered by contractors anxious for additional work. But the decision was "No". There was enough on the grounds to open a successful Fair, more would have been gilding the lily, but particularly it would have meant another million dollars eventually to be paid back. There was a fixed determination, reiterated many times every day—"We will pay off the Gold Notes in full". That controlled every thought and act of the Exposition management.

The Exposition had been in constant touch with loop banks. While there was no need to borrow money during the construction period, the banks had been kept fully informed on its financial position and prospects. This proved most helpful because many contractors and material manufacturers were able to negotiate loans from these banks on their Exposition contracts.

The major items of income during the construction period are recapitulated here:

Gold Notes purchased by guarantors.....	\$5,999,200.00
Gold Notes purchased by non-guarantors.....	912,700.00
Gold Notes purchased by employees.....	309,500.00
Gold Notes used in payment for materials and services.....	2,581,400.00

Total amount of Gold Notes Issued.....\$9,802,800.00

Gold Notes to the amount of \$78,600.00 were later accepted in payment for exhibit space and other obligations, leaving Gold Notes to the value of \$9,724,200.00 as net issued and outstanding.

Founder and Sustaining Memberships.....	\$ 271,400.00
Rental of space to exhibitors and concessionaires.....	3,742,865.06
Advance ticket sale	966,237.10*
Legion Memberships	637,754.35*
Unsecured notes or open account.....	1,800,000.00
Miscellaneous items such as interest and pre-Fair admissions	100,000.00

In accordance with the Trust Indenture, the Exposition was required to deposit daily with the Trustee 40% of the gate admissions, leaving only 60% for operating expenses. This, with other factors, contributed to an expected period of financial stringency. Many of the early visitors came in on advance sale tickets, the receipts from which had been already used. In accordance with the contracts with the concessionaires, the Exposition would not share in their take until their capital investment had been paid off, or not until August. Large crowds were not anticipated until the vacation period began, which was after the middle of July. Liabilities incurred during the construction period were scheduled for payment during July.

While credits could undoubtedly have been extended, the Exposition desired to maintain its reputation of meeting every obligation on time, so while it still had \$400,000 in its operating cash fund on July 1, 1933, the decision was made to negotiate a loan of \$500,000 from the banks. Since they were well aware of the situation, no trouble was experienced and the money was obtained through joint action of the Continental Illinois Bank and Trust Company, the First National Bank of Chicago, the Harris Trust and Savings Bank, the Northern Trust Company, and the City National Bank and Trust Company.

This loan was secured by pledging receivables of \$300,000 and providing that income from concessions was to be paid daily to the banks. While not due until September 15, the loan was retired in full by August 19th. By this time all obligations incurred during the construction period and scheduled for payment had been liquidated.

The anticipation of large crowds in August and substantial income from concessions proved correct. All indebtedness was paid in advance of due dates, resulting in the saving of interest and taking advantage of cash discounts.

Except for the payment of the Gold Notes, the Exposition was never again

*Only sixty percent available for construction and operating purposes.

in tight financial straits. But this freedom did not permit any relaxation in the close scrutiny of every expenditure. The operating budget was studied daily and altered many times to meet changing prospects and conditions. Unremitting, meticulous care that funds be not wasted was observed. However, large sums were frequently appropriated for extra spectacles, pageants, and stunts not contemplated in normal expenses, when the returns in revenue, attendance, or publicity seemed to justify them.

Payments to Note Holders

Through all this, funds were accumulating in the hand of the Trustee. There were monies representing forty per cent of Legion Membership and advance ticket sales, in addition to the daily deposit from gate receipts. By September 1, 1933, these funds amounted to \$2,187,835.14. So on September 1 an initial distribution of 20% was made, amounting to \$1,944,840. An additional 10% was paid on October 1, on October 15, and on November 13, each of which amounted to \$972,420. These payments totalled 50% of the original par value outstanding (\$9,724,200) and amounted to \$4,862,100.

With the close of the Exposition on November 11, half of the Gold Notes were paid. The determination to pay them in full was to a large measure responsible for the decision to hold the Fair the second year. There was a widespread public demand for an encore and exhibitors and concessionaires had expressed a willingness to go along, but there had to be a definite urge to run the great risk of a second season. The staff was dead tired, there were endless legal and financial problems to be solved, and it was venturing into an untried field contrary to all precedent.

With the last payment on November 13 to the holders of Gold Notes, there remained in the Exposition treasury a net amount of \$1,095,755.13, after balancing off accounts receivable and payable. This was just about the sum required to demolish the Fair as provided in the contract with the South Park, so little or no additional money could have been paid on the Gold Notes.

A careful study indicated that the total cost of wintering the Exposition and of new construction and rehabilitation would be within the funds probably available.

Operating expenses a second year could be met by a smaller attendance than the most pessimistic of predictions, therefore substantial additional sums could be paid on the Gold Notes. In the decision to hold the Fair the second year, there seemed to be everything to gain and nothing to lose. Much the same arguments were presented to hold open a third year. But the incentive was gone—the bonds were paid in full.

Early predictions for the 1934 season proved accurate and, on opening day, the Exposition was in an excellent cash position and it had not been necessary to seek outside credit in the interim.

During the stand-by period from November 12, 1933 to May 26, 1934, there was an expenditure of \$3,300,083.17 classified as follows:

New construction and equipment	\$1,209,466.61
Rehabilitation	891,705.63
Administrative and financial	1,198,821.93
The income during this period amounted to \$3,543,026.47.	

It was possible to negotiate more favorable concessionaire contracts to the Exposition than the previous year. This was because their principal construction costs had already been amortized and particularly because accurate data was available from the previous year's experience on their actual take and profits. There was received \$622,932.75 from this source.

The income from exhibitors was considerably less than the first year, as the rental charge was placed at \$2.50 per square foot, compared with the basic charge of \$10.00 per square foot for the 1933 Fair. There was received \$859,624.75 from this source.

Advance ticket sales produced \$2,060,468.97, and on opening day there were in the hands of the public over 5,000,000 single admission tickets and 8,250 season tickets.

Legal and Financial Problems

A number of knotty problems presented themselves for solution. They usually involved the question of whether the 1934 Exposition was an entirely separate enterprise with its own legal and financial entity, or whether it was merely a continuation of the 1933 edition. It was far from being an academic question, for such practical issues arose as the validity of guarantees obtained in 1929, which warranted the payment of Gold notes for an Exposition to be held in 1933.

To prevent any embarrassment, it was decided to negotiate new contracts on all Exposition affairs, and to seek releases from all persons or agencies which might consider the second year a separate affair. Later, in a test case, the courts decided that the 1934 Exposition was not a continuance of that of 1933, but a new Exposition.

The original guarantors had subsequently purchased Gold Notes to an amount of \$5,999,200.00. They had been released from their guarantee by an amount equal to the value of the Gold Notes purchased. These notes in turn had been stamped "not guaranteed".

During the latter part of 1933, a number of additional guarantors bought guaranteed notes in the open market and presented them to the Trustee for release of their guarantee. By early 1934, there remained only \$1,578,000 par value of the original note issue that had not been released from the guarantee, \$8,146,200 having been so released.

To forestall any legal involvement over the question of paying off all the outstanding notes on an equal pro rata basis, the guarantors who had purchased notes and caused them to be released were asked to subordinate their notes to the remaining notes still bearing the guarantee. It was a great deal to ask of those who had already supported the Exposition so loyally, and it was most

gratifying to have 80% of them acquiesce to the subordination. It meant that they would not receive anything on their notes in addition to the 50% already received until all of the guaranteed notes had been paid—both as to principal and interest. That they were fully rewarded for their faith, was the brightest light of the Exposition.

The following schedule is a summary of the dates and amounts of distribution made to holders of Gold Notes in both 1933 and 1934:

Dates and Amounts of Distribution Made to Gold Note Holders in 1933 and 1934

Date	AMOUNT PAID TO			
	Guaranteed Notes	Released Notes	Subordinated Notes	Total
September 1, 1933	\$ 315,600	\$ 331,500	\$1,297,740	\$1,944,840
October 1, 1933	157,800	165,750	648,870	972,420
October 15, 1933	157,800	165,750	648,870	972,420
November 13, 1933	157,800	165,750	648,870	972,420
June 1, 1934	789,000	165,750	.....	954,750
September 1, 1934	.....	165,750	648,870	814,620
October 1, 1934	.....	165,750	648,870	814,620
October 15, 1934	.....	165,750	648,870	814,620
November 1, 1934	.....	165,750	713,757	879,507
November 20, 1934	.....	.....	583,983	583,983
	<u>\$1,578,000</u>	<u>\$1,657,500</u>	<u>\$6,488,700</u>	<u>\$9,724,200</u>

It will be noted that no payment was made to subordinated note holders in the distribution of June 1, 1934 and no payments on guaranteed notes in subsequent distributions. The subordination agreement permitted the payment of all guaranteed notes in full out of the first monies received by the Trustee. This in effect released all of the guarantors, as there were then no guaranteed notes outstanding.

The interest paid on all classes of notes from April 15, 1930 to November 20, 1934 amounted to \$1,480,888.02. The payments from both principal and interest totalled \$11,283,688.02, of which \$6,833,385.12 represented 40% of the gate receipts, and \$4,450,302.90 was remitted to the Trustee from corporate funds.

Final Balance in the Black

The 1934 edition came to a triumphant conclusion with all major goals accomplished. The splendid organization was rapidly disbanded, expenses were quickly curtailed, and all financial obligations both contractual and moral, were liquidated as soon as they were presented or could be determined. By December 31, 1934, there was a net balance on hand of \$688,165.35, to be used for demolition, future claims, and dissolution of the organization.

The Exposition had been granted the right to use land under the jurisdiction of the South Park, provided that the site was returned in the condition in which we acquired it. The Park commissioners had the right to retain any of the buildings owned by the Fair. The only structure selected was the Administration building, and this was used as Park headquarters until their new office building was completed. It was demolished in 1940 and today the only remaining mark is the memorial columnn commemorating the Balbo flight.

Exhibitors and concessionaires removed their own structures. The Barker-Goldman-Lubin Company of Springfield, Illinois, demolished and removed all Fair buildings, paying the Exposition \$28,000 for the salvage value. Early in 1936 their work was completed to the satisfaction of the management and the park officials.

There would have been still much to do to comply with the terms of the ordinance to restore the grounds. Original roads and walks had been torn up and miles of new ones laid. Level green sod and elms covered vast areas which originally had been dump heaps of ashes, bed springs, and automobile bodies. Sewer and drainage systems criss-crossed underground, much of which might be usable for Park purposes.

To attempt to restore the grounds to the letter of the contract would have been exorbitantly expensive, wasteful of usable material and works, and difficult of determination. A working solution was formed by agreeing to pay to the Chicago Park District a compensating sum of money, and being relieved of all further obligations of restoration. By an ordinance passed July 2, 1935, the sum of \$275,000 was accepted and the Exposition finally vacated the grounds.

It was a mutually fortunate adjustment. It would have cost the management more than the agreed sum, for it would have had to maintain an expensive overhead organization for at least another year. The Park gained because it was not only free to utilize whatever of value was left by the Exposition, but received sufficient cash to make many new improvements in the Park area.

It marked the termination of what had been a most pleasant association. The South Park, which later was incorporated in the Chicago Park District, had been excellent landlords. Within the authorities granted them, they had done everything in their power to make the Exposition a success and a credit to Chicago. No political demands whatsoever were made upon the administration of the Fair. Our deep thanks and appreciation went to Edward J. Kelly, as President of the South Park Board, and to Robert J. Dunham, as President of the Chicago Park District, and to George T. Donoghue, who was Superintendent under both administrations.

The Exposition was incorporated as an organization not for profit, and hence no member, employee, or associate could receive a dividend or share in a profit or surplus. Because of this status, it enjoyed many privileges such as exemption from income taxes or the payment of a tax on gate receipts. Those who made financial contributions were empowered to deduct them from their income tax returns.

It seemed an academic question to ask in 1929 what was to be done with any money remaining when the Exposition was over, as no World's Fair held previously (or since) has enjoyed a surplus. It is diplomatically simple to divide up money that does not exist, and which few believed ever would. How different a story to have money which must be given away and to decide among all the claims, charities, funds, and worthwhile projects who might demand a share. To decide which and how much would only mean hard feelings on the part of those who perhaps had an apparently rightful claim, but who had to be left out.

So in 1929 the decision was made to divide the surplus, if any, among those who had been of material aid to the Exposition and whose announced purposes were similar to those of A Century of Progress. Binding contracts were negotiated in which there was a *quid pro quo*. Substantial contributions were made to the success of the Exposition, by the so-called "residual legatees" and they were entitled to share in the surplus.

When the books of A Century of Progress finally closed, there was \$160,000 available for distribution. The South Park received 25%, the Museum of Science & Industry 25%, the Chicago Art Institute 20%, the Adler Planetarium 10%, and the remaining 20% was divided among the Yerkes Observatory, the Smithsonian Institution, the Chicago Regional Planning Commission, and associations for the care and preservation of the Lama Temple of Jehol and for Fort Dearborn.

TABLE 1.

A CENTURY OF PROGRESS
SUMMARY OF ALL RECEIPTS AND DISBURSEMENTS
FROM JANUARY 5, 1928, TO DECEMBER 31, 1934

RECEIPTS		DISBURSEMENTS	
Gross Operating Revenue (See Table 2) -----	\$31,762,685.00	Gross Administrative and Operating Ex- penses (See Table 2) -----	\$18,632,624.79
Reimbursement for construction work performed for others (See Table 3) -----	1,277,269.49	Gross Construction Costs (See Table 3)	13,719,164.37
Proceeds from Gold Notes -----	9,724,200.00	Payment of Gold Notes-----	9,724,200.00
Borrowed from Banks -----	825,000.00	Principal -----	825,000.00
Total Receipts -----	<u>\$43,589,154.49</u>	Payment of Bank Loans-----	-----
		Total Disbursements-----	<u>\$42,900,989.16</u>
Excess of Receipts over Disbursements, Available for Organization Expenses, Demolition, and Final Liquidation -----			
In addition to funds disbursed by A Century of Progress, as given in the Table above, it is estimated that for the two Expositions, disbursements by others were:			
By Concessionaires:			
For all purposes, about -----			
By Exhibitors:			
For Construction, about -----		\$ 4,800,000.00	
For Rental of Space, about -----		3,850,000.00	
For Preparation and Installation of Exhibits, about -----		11,750,000.00	
For Operating Costs, about -----		12,900,000.00	
TOTAL -----		<u>\$57,300,000.00</u>	
Total Disbursements for all purposes by A Century of Progress, Exhibitors and Concessionaires are thus estimated to be -----			
<u>\$100,200,989.16</u>			

TABLE 2.

**A CENTURY OF PROGRESS OPERATING REVENUE AND ADMINISTRATIVE
AND OPERATING EXPENSES FROM JANUARY 5, 1928, TO DECEMBER 31, 1934.**
(Construction Costs not included)

OPERATING REVENUE:		Construction Period	1933 Fair Period	Non-Operating Period	1934 Fair Period	Demolition Period to Dec. 31, 1934	Total to Dec. 31, 1934
Admissions to Grounds-----	\$ 170,871.40	\$10,176,804.78	\$	\$ 6,285,164.01	\$	\$16,682,840.19	
Rental of Space-----	7,459.37	3,742,865.06		1,480,897.50		5,223,762.56	
Participation in receipts of concessionaires		2,236,418.11	4,824.07	3,184,491.25		5,423,192.80	
A Century of Progress owned or operated						1,500,783.00	
concessions -----	33,521.44	828,110.59		639,150.97		271,400.00	
Contributions of Founder and Sustain- ing Members -----	271,400.00						
All other revenue including interest on Deposited Funds-----	93,472.61	46,884.30	38,539.52	35,878.95	45,122.14	259,897.52	
	\$ 576,724.82	\$17,031,082.84	\$43,363.59	\$11,625,582.68	\$ 45,122.14	\$29,321,876.07	
Add: Receipts from sale of Guide Books, Mer- chandise, etc., and for services per- formed for others (construction ex- cepted) -----	\$ 182,362.77	\$ 1,177,218.88	\$30,560.28	\$ 1,032,318.81	\$ 18,348.19	\$ 2,440,808.93	
Gross Operating Revenue-----	\$ 759,087.59	\$18,208,301.72	\$73,923.87	\$12,657,901.49	\$ 63,470.33	\$31,762,685.00	

ADMINISTRATIVE AND OPERATING EXPENSES:							
President's Office-----	\$ 81,215.26	\$ 19,153.39	\$ 23,959.69	\$ 30,485.24	\$ 22,609.00†	\$ 177,422.58	
General Manager's Office-----	351,818.94	86,837.51	50,554.78	125,554.71	2,203.95	614,765.94	
Secretary's Office-----	32,606.44	56,490.88	18,854.61	81,618.37	191,783.25	191,783.25	
Controller's Office-----	301,372.13	1,013,508.52	145,492.27	836,948.56	29,192.28	2,332,518.76	
General Overhead-----	800,314.08	1,074,961.41	132,200.79	575,910.54	28,341.43	2,611,728.25	
Promotion Department-----	428,476.60	165,835.49	59,442.56	192,401.00		846,155.65	
Exhibit and Concession Departments-----	1,245,554.41	210,518.80	97,716.33	170,106.96	100,279.57	1,723,896.50	
Operation and Maintenance Department-----	1,394,635.75	3,326,567.46	446,319.21	3,148,462.39	75,116.14	8,416,264.38	
Demolition Department-----						75,116.14	
Add: Financial Expenses: including inter- est on Gold Notes, cost of procuring Founder, Sustaining and Legion Mem- bers, and minor items-----	\$4,635,993.61	\$ 5,953,882.46	\$ 974,540.24	\$ 5,161,487.77	\$257,742.37	\$16,983,646.45	
Gross Administrative and Operating Ex- penses -----	\$1,112,428.59	\$ 258,921.02	\$ 168,420.75	\$ 105,054.54	\$ 4,153.44	\$ 1,648,978.33*	
Excess of Gross Operating Revenue over Gross Operating Expenses-----	\$5,748,422.20	\$ 6,212,803.48	\$1,142,960.99	\$ 5,266,542.31	\$261,895.81	\$18,632,624.79	
	\$4,989,334.61*	\$11,995,498.24	\$1,069,037.12*	\$ 7,391,359.18	\$198,425.48*	\$13,130,060.21	

*Deficit
†Includes General Manager's Office
**Of this amount \$1,480,888.02 was
for interest on Gold Notes plus 2%
normal tax thereon

NOTE—Gross Operating Revenue over Gross Operating Expenses-----\$13,130,060.21
Less—Net Construction Costs (See Table 3)-----12,441,894.88
Available for organization expense, demolition, and final liquidation---\$ 688,165.33

TABLE 3.

A CENTURY OF PROGRESS CONSTRUCTION COSTS TO DECEMBER 31, 1934.

	Expenditures			Total
	Jan. 5, 1928 To Nov. 12, 1933	Nov. 12, 1933 To Dec. 31, 1934		
Construction Performed by A Century of Progress—				
Buildings, including construction performed for others-----	\$ 5,758,577.11	\$ 424,945.98		\$ 6,183,523.09
Utilities, paving, landscaping and other general Projects-----	4,141,215.77	685,921.73		4,827,137.50
Concessions of A Century of Progress and Special Features-----	651,650.52			651,650.52
Exhibits-----	202,898.11	10,530.02		213,428.13
Supervision, Architectural Fees, Design and Construction Department Expenses-----	563,909.33	62,188.65		626,097.98
Equipment-----	358,518.86	158,270.33		516,789.21
Rehabilitation cost incurred in preparing for 1934 Exposition—				
Buildings and Grounds, including \$55,956.04, expended by				
Design and Construction Department and not allocated to				
new construction-----				
Exhibits-----		532,586.75		532,586.75
Concessions of A Century of Progress-----		35,432.38		35,432.38
		132,518.81		132,518.81
Gross Construction Costs-----	\$11,676,769.72	\$2,042,394.65		\$13,719,164.37
Less—Reimbursement for construction work done for others-----	1,108,448.01	168,821.48		1,277,269.49
Net Construction Costs-----	\$10,568,321.71	\$1,873,573.17		\$12,441,894.88

TABLE 4.

A CENTURY OF PROGRESS REPORT ON CONCESSIONS
MAY 27, 1933, TO NOVEMBER 12, 1933.

Description of Concession—	Gross Sales	A Century of Progress Participation	Space Charges	Total Revenue To A Century of Progress
Refreshment Stands-----	\$ 2,678,245.96	\$ 270,998.32	\$280,440.77	\$ 551,439.09
Restaurants -----	6,607,712.63	319,884.94	74,642.00	394,526.94
Stores -----	2,788,992.89	109,973.63	247,177.00	367,150.63
Rides and Amusements-----	1,220,233.08	158,305.87	31,800.00	190,105.87
Shows and Spectacles-----	5,804,635.04	670,466.80	43,600.00	714,066.80
Games and Vending Machines-----	408,373.82	96,209.73	8,875.00	105,084.73
Utilities—Transportation, etc.-----	2,787,149.24	541,357.61	16,200.00	557,557.61
Miscellaneous Events, etc.-----	360,703.43	29,564.64	28,000.00	57,564.64
Exhibitors with Sales Privileges-----	652,438.24	12,589.69	3,184.00	15,773.69
Miscellaneous Stands-----	346,024.82	18,598.71	32,865.00	51,463.71
Shops and Counters-----	298,803.30	15,927.64	8,780.84	24,708.48
TOTALS-----	\$23,953,312.45	\$2,243,877.48	\$775,564.61	\$3,019,442.09

TABLE 5.

A CENTURY OF PROGRESS REPORT ON CONCESSIONS
MAY 26, 1934, TO OCTOBER 31, 1934.

Description of Concession—	Gross Sales	A Century of Progress Participation	Space Charges	Total Revenue To A Century of Progress
Refreshment Stands-----	\$ 1,684,287.37	\$ 397,434.80	\$ 99,790.00	\$ 497,224.80
Restaurants -----	4,626,952.33	739,573.64	137,760.00	877,333.64
Stores -----	2,483,710.84	378,754.01	198,118.00	576,872.01
Rides and Amusements-----	496,912.52	77,286.53	31,050.00	108,336.53
Shows and Spectacles-----	3,857,803.66	898,249.35	144,079.75	1,042,329.10
Games and Vending Machines-----	353,316.35	109,968.34	7,100.00	117,068.34
Utilities—Transportation, etc.-----	1,374,184.06	583,224.58	3,575.00	586,599.58
TOTALS-----	\$14,877,167.13	\$3,184,491.25	\$621,272.75	\$3,805,764.00

TABLE 6.

A CENTURY OF PROGRESS
SUMMARY OF ADMISSIONS BY WEEKS
1933

WEEK ENDING	CASH ADMISSIONS			TICKET SALES				TOTAL PAID ADMISS- SIONS	FREE ADMIS- SIONS EMPLOY- EES & OTHERS	GRAND TOTAL
	Children		Total	Season	Souvenir		Special			
	Adult	Children			Souvenir	Total				
May 28	121,769	9,517	131,286	**	39,070	41,073	2,003	172,359	60,878	233,237
June 4	287,753	24,176	311,929	**	98,268	98,268	-0-	410,197	231,043	641,240
June 11	282,879	28,942	311,821	3,862	87,700	91,562	-0-	403,383	219,232	622,615
June 18	446,521	57,920	504,441	3,862	155,957	160,244	-0-	664,685	216,743	881,428
June 25	503,396	72,662	576,058	4,204	170,693	176,897	-0-	752,955	195,336	948,291
July 2	449,334	64,529	513,863	5,261	136,603	143,451	1,587	657,314	194,239	851,573
July 9	657,046	88,509	745,555	6,316	212,145	232,165	73,204	1,037,720	216,721	1,254,441
July 16	657,046	88,509	745,555	6,440	219,672	239,738	13,626	906,981	222,337	1,129,304
July 23	581,396	85,833	667,229	5,366	280,398	287,659	1,895	900,981	205,259	1,086,240
July 30	524,570	88,752	613,322	5,323	281,726	270,187	2,923	874,514	212,236	1,086,750
Aug. 6	516,024	88,303	604,327	5,323	182,269	190,291	2,629	777,470	219,434	1,016,904
Aug. 13	897,730	100,149	997,879	5,210	194,853	201,718	1,655	1,225,801	234,567	1,460,368
Aug. 20	1,078,508	154,715	1,233,223	5,194	193,470	199,796	1,132	1,433,019	231,409	1,664,428
Aug. 27	1,178,605	177,618	1,356,223	4,994	183,544	185,222	6,684	1,551,445	226,301	1,777,746
Sept. 3	1,256,473	182,513	1,438,986	4,666	157,877	165,273	2,730	1,604,259	237,502	1,841,761
Sept. 10	871,804	105,538	977,342	4,506	115,228	119,734	-0-	1,097,076	226,656	1,323,732
Sept. 17	746,934	79,589	826,523	4,425	106,301	112,468	1,742	938,991	214,672	1,153,663
Sept. 24	812,877	61,267	874,144	5,022	115,101	135,038	14,915	1,009,182	213,682	1,222,864
Oct. 1	766,911	64,487	831,398	4,747	112,859	137,471	19,865	968,869	218,021	1,186,890
Oct. 8	909,011	109,983	1,018,994	5,239	129,084	139,343	5,020	1,158,337	223,864	1,382,201
Oct. 15	1,042,403	217,639	1,260,042	6,031	147,784	164,713	10,898	1,424,755	216,582	1,641,337
Oct. 22	683,888	58,386	742,274	3,139	75,425	96,464	17,900	838,738	189,398	1,028,136
Oct. 29	474,844	38,671	513,515	3,346	54,142	57,488	-0-	571,003	176,298	747,301
Nov. 5	347,059	34,002	381,061	3,843	51,719	60,781	5,219	441,842	160,685	602,527
Nov. 12	176,632	20,523	197,155	4,105	81,650	101,439	15,684	298,594	174,158	472,752
Advance Sales Unredeemed					175,846	245,403	69,557	245,403		245,403
TOTALS	16,301,397	2,140,576	18,441,973	113,564	3,739,384	4,123,886	270,938	22,565,859	5,137,273	27,703,132

**No record kept until 6/6/33

TABLE 7.

A CENTURY OF PROGRESS SUMMARY OF ADMISSIONS BY WEEKS 1934

WEEK ENDING	CASH ADMISSIONS			TICKET SALES					TOTAL PAID ADMISS- IONS	FREE ADMISS- IONS EMPLOY- RES & OTHERS	GRAND TOTAL
	Adult	Children	Total	Season	Souvenir	Special	Constitu- tional Day	Total			
May 27	104,705	14,941	119,646	8,548	103,974	4,436		116,258	235,904	71,514	307,418
June 3	166,321	43,484	209,805	17,348	186,737	78		204,363	825,558	206,115	1,031,673
June 10	156,568	20,359	186,937	13,641	168,915	1,008		201,670	358,627	205,243	563,870
June 17	155,784	29,656	185,460	16,882	232,315	4,150		249,057	434,527	206,043	640,570
June 24	212,118	44,608	256,726	19,532	226,322	4,150		269,134	535,860	208,992	734,852
July 1	219,521	34,068	253,589	22,607	209,113	1,625		230,311	483,900	217,898	701,798
July 8	255,370	34,111	319,481	22,607	346,986	6,20		369,506	688,987	214,146	903,133
July 15	255,197	36,084	301,281	27,062	270,319	1,276		291,658	592,919	209,293	802,212
July 22	277,940	62,819	340,819	17,348	221,819	5,276		247,056	587,987	206,675	794,550
July 29	263,782	73,454	337,236	18,334	229,329	8,975		249,819	565,815	203,223	769,036
Aug. 5	365,858	83,454	449,312	19,570	229,329	8,975		282,723	662,065	202,126	864,191
Aug. 12	362,503	80,153	442,656	18,268	272,769	6,531		300,540	743,776	203,833	947,609
Aug. 19	480,192	110,110	590,302	19,719	353,709	5,005		325,516	916,478	213,488	1,129,966
Aug. 26	518,471	139,360	657,831	13,225	250,676	10,655		348,354	1,066,385	209,065	1,275,450
Sept. 2	617,454	138,456	755,920	13,225	190,403	12,854		222,039	819,784	193,478	1,013,262
Sept. 9	521,008	76,737	597,745	13,762	154,784	17,658	451,233	176,099	611,976	185,186	797,162
Sept. 16	351,458	64,419	415,877	13,762	124,784	32,458		129,744	1,056,215	174,260	1,230,475
Sept. 23	350,205	63,708	413,913	12,403	124,784	17,658		129,744	543,989	174,260	718,249
Sept. 30	371,687	96,338	468,025	12,403	124,784	17,658		129,744	647,737	178,169	825,906
Oct. 7	370,876	118,611	489,487	11,878	159,937	10,150		168,939	785,635	171,724	957,359
Oct. 14	442,514	134,112	576,626	11,878	159,937	14,120		118,672	856,592	178,220	1,034,812
Oct. 21	362,619	127,971	490,590	11,878	159,937	9,101		187,783	632,140	117,381	749,521
Oct. 28	367,499	161,210	528,709	12,117	156,307	6,906		181,353			
Oct. 31	356,246	94,541	450,787		153,330						
Advance Sales Undeemed					128,181	28,078	15,638	171,897	171,897		171,897
TOTALS	8,072,554	2,346,217	10,418,771	420,485	4,974,948	205,302	466,871	6,067,606	16,486,377	4,579,718	21,066,095

THE SITE

The histories of world's fairs have been replete with differences of opinion concerning the location of the grounds within the city of choice. Each section, vaunting its achievements and advantages, would proffer its claims and intimate its unique qualifications for candidacy.

A Century of Progress was particularly fortunate in that its administration was never required to steer a diplomatic course through such friendly rivalries. While one or two sites in the outskirts of the city were suggested as possibilities, none was ever pressed. The Exposition, at its very outset, benefited from the unanimity of the Chicago citizenry in the assumption that the Fair was to be on the lake front, and in the heart of the city.

Both of these essentials were embodied in the strip of parkland bordering the lake, extending from 12th Street on the north, for a distance of approximately three miles, to 39th Street on the south. This section included the island known as Northerly, and covered an area of about 427 acres, of which the lagoons, lying between Northerly Island and the mainland, constituted approximately 86 acres.

The immediately obvious advantages were its accessibility, the group of permanent buildings already there, and its adjacency to the water. Closely approximating the center of the metropolitan population, this site was equally accessible from all sections of the city. It was separated from the loop, Chicago's central business district, by only a dozen blocks. Nearly a million people entered the Loop daily for business and other purposes by the existing means of transportation, and on its fringes lay the principal railroad terminals. There, too, were located large hotels with a capacity of more than 25,000 people.

The location of the Illinois Central Railroad, literally at the door of the site, established it as a major transportation service to the Exposition, without the necessity of special construction work other than a short spur and some minor rearrangement of layout. The adjacent harbor offered its additional facilities, while, on the land side, the fact that the park drive was a principal artery through the city had already occasioned the development of extensive parking facilities in the area. To accommodate the public buildings already located in the park, and the crowds entering adjacent Soldier Field for special events, both bus and street car service ran within walking distance of several entrances. Thus the only necessary consideration was the possible extension of existing lines and expansion of the service.

Importance of Nearby Facilities

The existing transportation facilities, serving the permanent structures immediately adjacent to the Exposition site provided a great initial advantage. These institutions—the Field Museum of Natural History, the Shedd Aquarium, the Planetarium, Soldier Field, and, a little farther distant, the Art Institute—would lend grace and dignity to whatever form might be evolved for the Exposition, though many thought that the modern lines of Exposition buildings would clash with their classical style. They had not only already familiarized Chicago and its visitors with this locality, but would continue to draw people there during the pre-Fair period, enabling them to note the progress of the work on the grounds, with a resultant quickening of their interest.

Figures on attendance at previous large events in Soldier Field, and the materials of construction and the various service supplies which had to be brought to the institutions in the Grant Park area, were invaluable guides in the computation of the Exposition's estimate of the rate at which the existing transportation system could handle the exposition problems, during both construction and operation periods.

And, of course, dominating and enhancing everything was Nature's own contribution—the ever-changing waters of Lake Michigan. Their beauty was suggestive of endless possibilities in the elaboration of the Exposition, which might lend to the spectacle a pleasing variety, and contribute to that spirit of festivity, adventure and romance so inseparably a factor of the successful fair.

The Exposition was later fully to appreciate further advantages inherent to the site. The acreage was adjustable to whatever size developments might indicate. Also, location on state controlled land, where all functions usually a part of municipal organization were confined to one governmental agency, was to be of inestimable assistance in reducing to the minimum the time required to push through the construction program.

As early as 1927, in the Hurley report, the lake shore between 12th Street and 57th Street was mentioned as the ideal site. From that time on, the Exposition and the lake front appeared synonymous in the minds of the Board, the press, and the Chicago citizenry.

Legislative Enabling Act

Nevertheless, it was not until June of 1929, about ten days before the adjournment of the Illinois State Assembly for a two-year period, that the informal conversations on the subject were suddenly translated into action for the securing of the necessary enabling act. Only then could this forward step have been indisputably defended. Further delay would have meant the calling of a special session of the legislature. An earlier attempt would not have permitted sufficient solidification of the basic plans to give that certainty of an ability to perform on which the Exposition authorities always insisted. This was one of the early precedents of a standard from which there was to be no deviation—never to start a thing until every tenet of every agreement could be fulfilled.

The immediate attention which the State Assembly gave to this matter was one of the many indications of the depth of interest shown in the project by the several public bodies concerned. Exposition authorities had remembered with some trepidation the apparently endless legislative delays which many fairs had encountered in their development. Here, however, was a bill of primary and basic importance which went through from start to finish in ten days. It is interesting to note at this point that so well did every individual, within whose province the bill came, do his work, that when the decision for a 1934 Fair necessitated a second enabling act, only minor changes from the 1933 Act were found desirable. No more telling commentary could be made on the assembly's alert knowledge of its trusteeship in a matter involving the public interest, nor on the careful thought and painstaking study which the Legal Committee and its associates had given to the Exposition's needs.

The bill passed with only one amendment, and this the Exposition was very glad to have inserted. It was the requirement that the Exposition police be selected from the state police civil service eligibility roll.

The bill was a simple one and did not enter into a mass of detail which befogged the basic issues. It simply granted an authority and then designated an agent of the state, the South Park Commission, to draft a proper contract covering the details of the Exposition's occupation. While retaining to the state in no uncertain terms its sovereign rights, it coincidentally assured to both the Park Board and the Exposition freedom to meet every exigency that arose, without having its legality questioned or put to test. One excellent provision was its grant of authority to the State's Attorney to exercise the right of eminent domain in the Exposition's behalf. The fact that no need arose to utilize it did not invalidate its essential wisdom.

South Park Ordinance

With the Enabling Act passed, it was tempting to hasten on to the drafting of the South Park Ordinance. The South Park and Exposition authorities, however, were so imbued with the determination to avoid major mistakes, and to understand completely every phase of the situation into which they were entering,

that almost a year was allowed to elapse before a contract was formally signed. In the meantime, frequent and exhaustive discussions relative to the problems and progress had ensued, and these laid the firm foundations on which the future relationship of these two bodies so satisfactorily rested.

Both the Commission and *A Century of Progress* turned to the exposition agreements of 1893 as a starting point. They gave the general form, but local conditions had changed to such an extent that pioneer work was necessary.

The essential spirit of the whole Ordinance, as it evolved, was the full recognition of the superior governmental control inherent in the South Park Commission. While the Exposition was allowed full freedom of action, in the last analysis it must be recognized that the Commission held a basic responsibility. However sympathetic it was to the Fair's plans and appreciative of its problems, the same test was always applied to each paragraph of the contract—namely, the effect on these public lands which had been loaned to the Exposition. The yardstick was that of public interest, and the Commission measured meticulously. To have wished an alteration in this attitude towards the Exposition would not have been even remotely possible, for the support through troublous times of a body so constant to its responsibilities was fully appreciated. This spirit was determinedly continued throughout 1934, when the several city park boards were consolidated into one.

Illustrative of these points was the requirement by the Commission of the building of a three-mile highway to replace the road which would be denied city traffic with the enclosing of the Exposition grounds. Although somewhat appalled by the necessity of constructing a diversion channel for the city traffic, the Exposition was unable to deny the logic and justice of the Commission's position. For the Commission felt it would not be fulfilling its obligation to the public should it force more traffic onto the already overcrowded, adjacent city streets.

The Commission left no opportunity for the Exposition's possible failure to rebound on the park. The posting of a performance bond, within 30 days of the acceptance of the Ordinance, was required. The amount of this was automatically increased with each succeeding year up to the close of the Fair, as insurance of its adherence to the terms of the Ordinance and indemnification against any damage resulting from the use of the park grounds, or from abandonment of the project before completion.

Looking also into the future, it provided that immediately after the close of the Exposition the Commission might designate any of its structures or other works desirable to maintain for park purposes, which were to be surrendered to them within ninety days. All structures or works not so designated were to be removed by the Exposition at its own expense, the park area to be restored to the same condition as when turned over to the Exposition authorities.

It is not to be denied that, at the time, the stringency of the Exposition's finances made these insurances a hardship. However, in retrospect, there were many compensations. Permission to take over the area in small sections was granted. This meant that it was unnecessary to establish an immediate guard force over the

entire area or to incur many other overhead expenses. Use of the existing park facilities, such as water and electric utilities, was allowed the Exposition wherever it would not interfere with regular park services. These things, and later the establishment of the Code Commission, under the jurisdiction of the park officials, instead of under the Exposition, gained a higher degree of public confidence than would have been possible otherwise.

The spirit of understanding and cooperation shown by Mayor Edward J. Kelly, then President of the Board of South Park Commissioners, and Mr. George T. Donoghue, General Superintendent of the South Parks, was an important factor in the success of the Fair. Consistent with their public responsibilities, they gave a full measure of support to the Exposition. To them, and to the other officials of the Park District who helped go the deep appreciation of the Fair management.

After the State Legislature had functioned and the South Park Commission had acted, there was yet one more hurdle to take before the Exposition could enter into the full enjoyment of its lease. Lake Michigan, as "navigable waters", is under the jurisdiction of the Federal Government. Accordingly, while any number of pleasing plans might be drawn both for utilization and embellishment of the lagoons and the lake shore, before any actual development of them could take place, it was essential to obtain the permission of the U. S. War Department, together with its approval of specific plans.

A question immediately raised was whether, even though acting under an Ordinance of the South Park Commission, a private group could erect temporary structures in the nature of bridges, or decorative features such as fountains, within the harbor district. The Federal authorities cooperated with the Exposition to the fullest extent here. Since the lagoons were of no use for maritime shipping and similar purposes, they could hardly interfere with harbor activities, and there was, therefore, no potential injury of public rights to require challenge by the authorities.

It was fully appreciated that the Exposition's right to enclose the lagoons, even as a matter of protecting life and property on its grounds, might be disputed. Fortunately, the civic interest of the local group of yachtsmen, to whom the free run of these lagoons would have been personally advantageous, was so closely bound up with the welfare of the Exposition that this theoretical question was never forced to a practical issue.

Determining Boundaries

When the time came for the consideration of boundaries, the fixing of the western line was determined by the location of the Illinois Central right-of-way. Provision was made for the diversion road to carry city traffic, as required in the Ordinance, and the fence line then indicated as close to that as possible, for the southern half of the grounds was very narrow, having a width of only a few hundred feet.

The natural layout of the northern end fixed that boundary in general. The

inclusion of Grant Park to the north was attractive to contemplate, for that area was already well landscaped and developed, even though its waterfront, being an integral part of the activities within the harbor and subject, therefore, to restrictions, would have occasioned an increase in complexities for the Exposition. That this idea had short life proved most fortunate in the long run, for since the Field Museum and the Aquarium did not become a part of the Exposition, their presence in this area would have created a serious obstacle towards extension from Grant Park to the south.

Another disadvantage of the inclusion of Grant Park lay in a suit, pending at the time, for the purpose of testing the right of an adjacent hotel, which overlooked the park, to prevent the erection of a structure of sufficient height to interfere with its view of the lake. The outcome of such a suit was problematical, and should any decision be greatly postponed, it would create an unnecessary hazard to the prompt opening of the Exposition.

The northern entrance was later specifically determined in consultation with the authorities of the Planetarium, the Aquarium, and the Field Museum. Each of these institutions had footage reserved to avoid encroachment. The Planetarium indicated its desire to be included within the Fair grounds, and boundary lines were negotiated with the other institutions concerned.

To build a series of islands close to shore was an accepted part of the project of the Chicago Plan Commission, and Northerly Island was the first of this series. When it would be completed and others built was uncertain, yet apparently not so far distant that such possibilities could be disregarded in laying out the Fair grounds. From the architectural standpoint, an extension of Northerly Island was highly desirable because it would result in modification of the disproportionate length of the strip of land to its breadth, thus permitting a better balance to the ground plan. The extension would also narrow the lagoon opening to the lake, and hence make it safer for the small craft plying between buildings.

By the time the South Park Commission contract was entered into, the suggestion that the Exposition itself build islands was recognized as impossible. Whatever was going to be done on the islands would determine how far south it would be necessary to take the southern boundary of the Fair. These things were finally weighed when the decision was made on the location of the Travel and Transport Building.

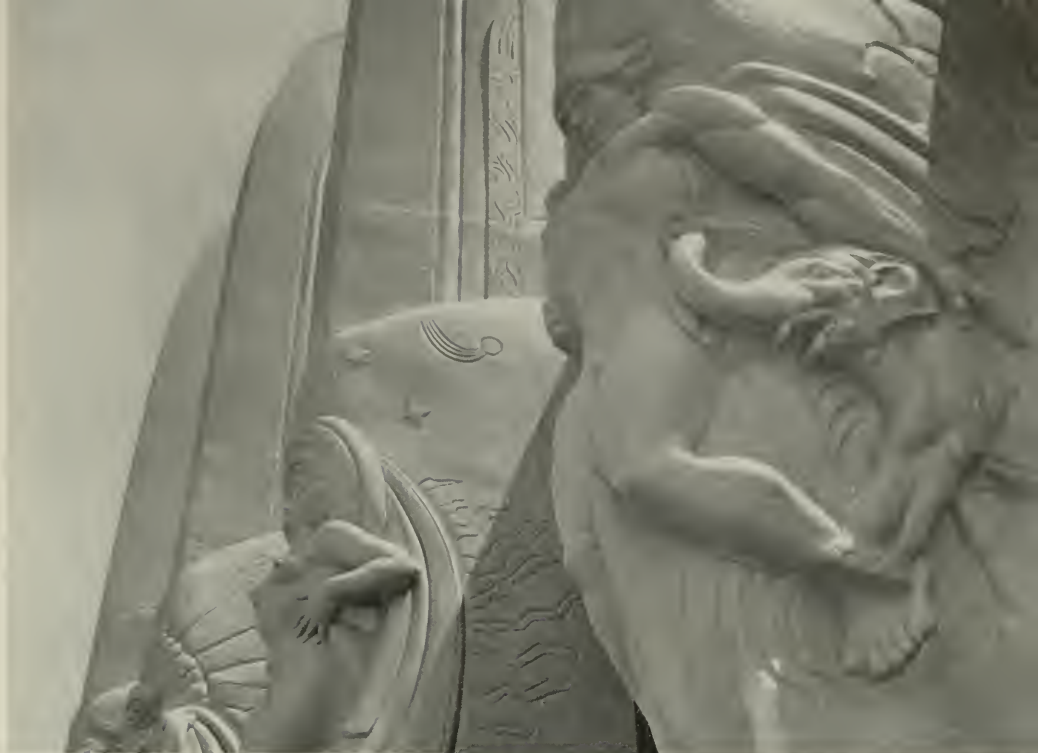
The question of extension appeared definitely settled when, in the summer of 1929, a bond issue for the island's completion was duly voted. However, the stock market collapsed and the beginnings of the depression were evident before the island bond issue was marketed. Park authorities announced that the bonds could not be legally sold for less than ninety-five, and it proved impossible to obtain that figure. The completion of the island, therefore, hung in the balance for two years. The dilemma was solved when the Fair purchased sufficient bonds from the Park at ninety-five to complete the island and resold them immediately at ninety-two and one half.

The actual completion of the island was an ordinary construction job. The extension comprised twelve acres of filled-in sand brought from the Michigan and Indiana shores, eight to thirty miles away, by suction dredges and self-unloading barges, and dumped into water from twelve to thirty feet deep. The fill was made behind a bulkhead twenty feet wide consisting of fifty-four hundred piles varying in length from forty-five to fifty-five feet, filled with sixty thousand tons of small riprap stone, and capped with seven thousand tons of one to five-ton cover stones.

The Site Was "Man-Made" Land

The three-mile by six-hundred-foot strip on which the Exposition was to be built was an area of waste land, relieved only by clumps of weeds and an occasional straggly poplar, with a narrow strip of planting along Leif Eriksen Drive. It was entirely "man made". The fill above the lake bottom averaged from twenty to thirty feet in depth and varied from a miscellaneous assortment of junk and rubbish to good sand. Part of the site had been filled in by dumping refuse, and under the surface were found rusty bed springs, tin cans, radiators of old automobiles, discarded phonographs, coffee pots, odds and ends of every description; even a submerged scow was encountered while piles were being driven for the Foods and Agricultural Building.

Other parts of the site had been filled with sand taken from the bottom of Lake Michigan and pumped into areas enclosed by bulkheads. Beneath the lake level was a 45-foot layer of soft silt-like clay and sand, and under this was found hard pan, or solid rock. A section from 14th to 16th Streets had been filled from a borrow pit dug in the north lagoon. Obviously, such land created no inconsiderable problem in the determination of foundations and construction methods, and its difficulties were further aggravated by the capillary action from the lake.



Sculpture in Hall of Social Science.

A Concert in the Hall of Science Court.





General Exhibits Group with Firestone in Background.

Decorative Features, Hall of Science.



GETTING READY TO WORK

When the first field force of the Exposition, a small group of surveyors, set forward into their territory, the raw site of the Fair, they were confronted by conditions so starkly primitive that the adjacency of Michigan Boulevard and the teeming "Loop" might well have seemed an absurd unreality. There was but a single road through this strip of land. Stepping off it, evidences of civilization abruptly ceased, and feet sank into sand or mud and water. Among the riprap along the shore, wharf rats scurried to cover. There were no electric lines except along the Drive, and there was neither drinking water nor sewerage facilities.

Yet, somehow, before even the first elements of construction could begin, heavy trucks must plow through this land, steel would have to be transported from the railroad at the western boundary or through city traffic, some system of lighting installed, some means of water supply established. It was a challenge which the Exposition's trail blazers faced with pioneer sturdiness as they set themselves to the task of overcoming each obstacle as it arose.

Since the continuous traffic along Leif Eriksen Drive would be obstructed by the slow movement and the unloading of trucks along its length, it was recognized that one of the early essentials was the construction of the diversion road required in the South Park Ordinance. With the consequent freeing of the drive for Exposition purposes, there would be at least one avenue established for the passage of equipment and materials. Later, as building sites were determined, service roads leading to them would be constructed.

The trucking of materials into the grounds was fraught with potential difficulties. Extra handling from train to truck of such supplies as came into the city

by rail might result in appreciably greater expenses. The moving of heavy trucks through the congested downtown districts would involve considerable traffic complications.

Once they were inside the grounds, it was a matter of grave doubt that the type of pavements contemplated could bear the burden of the heavier loads. The answer to some of these problems was anticipated in the existence of a spur railroad track which had been previously used in the construction of Soldier Field and the Aquarium, at the north end of the park.

Lighting along the drive was provided from the regular park facilities. Following negotiations with the Park officials, arrangements were made for the Exposition to meet its own immediate electrical demands through the temporary use of the Park transformer vault in Soldier Field. This required no large capital expenditure, and was a stopgap over the period when the needs which the completed system must fulfill were being analyzed.

Raw water, pumped from the lake, had been installed to supply the Park's meager needs for landscaping, and this sufficed for the first construction requirements pending the evolution of the Exposition's own permanent system.

In spite of these primitive conditions, a population of several hundred individuals had existed for several years in this area, particularly on the edge of the island.

Living in tin can shacks wedged between the rocks and among the few volunteer bushes which had sprung up, they somehow eked out an existence. The Fair's introduction to the tact and efficiency of the South Park police was the considerate but thorough manner with which that little colony of nomads was uprooted when the grounds were later enclosed.

First Construction Contract

September 15, 1930, marked an important milestone in the Fair's history, for it was on this day that the first construction contract was let. To have a roadway, and that outside of the grounds, emerge as the first construction project was slightly deflating to both the staff of the Fair and the interested public who had been indulging in roseate dreams of a blossoming panorama of buildings, gardens and fountains. It was significantly indicative, however, of the vast amount of effort and money which went under the ground and into utilities of which the average visitor was to be completely oblivious.

Competition for this first contract was keen and there were some fears that the low bidder would make up in "extras". But the quality of the work was so high, and the dealings of the contractor so fair and cooperative, that eventually this contractor did practically all the road work on the grounds. The type of construction adopted was a macadam base with a natural rock-asphalt wearing surface.

The approach of winter made time a vital consideration if the road were to be ready for the next construction season. With unflagging determination, work was carried on simultaneously at several points along the three-mile stretch.

When, on December 17th, the entire job was finished, there surged through everyone a triumphant satisfaction, for the stage was now set for the beginning of operations, and the Fair was in a position to take over the site.

Nearness to Railroad Helpful

The location adjacent to a railroad proved exceptionally fortunate for a number of reasons. Much of the powered equipment required in the early construction operations was so heavy that its passage over the new roads involved too great a risk. What could well have been a formidable impediment was resolved through negotiations with the Illinois Central Railroad, which resulted in permission to bring such equipment through its yards, after the Fair had agreed to hold the railroad harmless in case of accidents.

Arrangements were made with the Illinois Central and the Park Board for the retention of the spur track to the north of the grounds. Tracks were laid into the south end of the grounds to the Travel and Transport site, and to service the freight station, later built by the Exposition.

During the pressure period before the opening of the Exposition, all available track space was in use and as many as 82 freight cars arrived in a single day. In all, 4,698 cars were switched in before the opening of the Fair on May 27, 1933.

Temporary Facilities Installed

The problems of light, water and toilets had to be solved from day to day. Temporary power was brought into the southern end of the grounds from the Commonwealth Edison station at 31st Street, and Soldier Field supplied the northern end, while, for Northerly Island, a temporary submerged cable was laid across the lagoon.

Water for drinking purposes was hauled in. Construction needs were met from the existing Park water system during the summer months. However, this had not been built to meet either heavy demands on it, or a rigorous winter season. More than one contractor pumped directly from Lake Michigan, and a particularly enterprising one even installed a system and sold the lake water direct to his associates.

The first winter exposed another urgent need. When the snows melted away it was found that the winter storms and ice had played havoc along the shore line. Several areas were seriously eroded, and it was obvious that this must be checked in order to carry out the general ground plan being developed. The Park authorities were quite as much interested in this as the Exposition, and the two groups combined their resources to provide heavy riprap wherever that would suffice. At one or two points, where the shoreline was exposed to the full force of the waves, more effective protection was required.

ARCHITECTURE INTERPRETS THE THEME

Theme and purpose having been determined, A Century of Progress turned to consideration of its tangible outward form. The architecture of an exposition implants first impressions and, being omnipresent, continues to impress itself on the visitors' consciousness.

The classical architecture of its predecessors which had satisfied the tastes of their generations and influenced architectural designs of succeeding periods, was not indicated for A Century of Progress. This should be radically novel. The millions of people who come many miles to see world's fairs are lured by something not encountered in the routine of their daily lives. The architecture should key the theme of the Exposition—in this case the application of science to industry. It should create structures most suitable for the purpose for which they were designed, and express the spirit of its own time.

While each structure must integrate these qualities, it must form part of a coordinated whole, vast in scale, inspiring in the massed effect and capable of transporting the visitor to a fairyland dream-world. Yet, underlying it all, and largely hidden, must be the facilities of a great mundane city, with such practical things as water pumping stations, sewers, transformer vaults and surface drains.

While the philosophy directing the pattern of its architecture was early established, many unknowns made its achievement a matter of daily concern, for an exposition is confronted with a myriad of problems not normal to more conventional construction. The size of each building and the number would depend upon the extent to which exhibitors could be induced to take space. The arrangement of the interiors would hinge upon the type of exhibits housed, and these

would vary in size from the Hope diamond to a giant electric locomotive. The amount of money that would be available ultimately was subject only to speculation.

While the answers to these questions, vital to every phase of the project, would not become definitely known until a few days before the opening date, construction must start three years in advance. A *modus operandi* must then be formulated which, while meeting the basic needs, would be flexible enough to absorb and adjust to the daily vicissitudes. With time always of the essence, with a fixed zero hour, with multitudinous details of interdependence tending to distract from the main course, with a credit that must be maintained, the plan must preclude interruptions to a swift and sure prosecution, yet permit the widest latitude in avoiding obstacles or taking advantage of fortuitous opportunities. It would be easier to change direction than velocity, for a lost momentum is difficult of restoration while a course may be altered with slight if any loss of speed.

The Architectural Commission

In the halls of the Administration Building expression was frequently given to the thought that "a kindly Providence looks over us and guides our destiny". It was certainly applicable to the selection of the Architectural Commission. Drawn from the far corners of the country and chosen with the conscious desire to find men who had "eminence as designers; capability as demonstrated in existing buildings of their creation; and ability to cooperate", they gave a full measure of loyal and unselfish service. Theirs was a doubly difficult task. While never for a moment yielding in their desire for an exposition of the highest architectural caliber, they met the practical problems of construction and the exigencies of many a desperate situation, with a whole-hearted and understanding spirit. They were fully conscious of the financial stringency and were willing to apply these financial policies to themselves, for they were the first to volunteer to accept due payments in gold notes. As a dream came toppling for want of money to realize it, they caught up its fragments to make the best that was possible with the funds that could be spared.

Announcement of the appointment of the Architectural Commission was made by President Dawes on March 2, 1928. It was composed of Harvey Wiley Corbett of New York as Chairman; Paul Philippe Cret of Philadelphia; Raymond Hood of New York; Arthur Brown, Jr., of San Francisco; Ralph T. Walker of New York and John A. Holabird, Edward H. Bennett, and Hubert Burnham of Chicago. Later Daniel H. Burnham, Joseph Urban, and Ferruccio Vitale were made members of the Commission. Alfred Geiffert, Jr. of New York was appointed after Mr. Vitale's death. Dr. Allen D. Albert served as secretary of the commission.

Early Architectural Problems

In expositions of the past, palaces of plaster had risen in stately processions, with rooms and ceilings impressive in their size and height, but with little regard

and seldom proper planning for the kind and size of exhibits they were to house.

It was early decided to cast off the shackles of the past and give a new freedom to design, particularly one which would serve the practical purpose of providing buildings suited in form and size to their primary requirement—the display of exhibits. With architectural requirements based on exhibit demands, the effectiveness would depend on planes and surfaces, as a background for the decorative effects of color and light, and the animated pattern of crowds of people moving at various levels on ramps and terraces. The architecture would give buildings, designed to create an effect based primarily on usefulness. New elements of construction, the products of science and industry, would be the vehicles of achievement.

The first meeting of the Commission was held in Chicago on May 23, 1928, and soon after the architects presented a statement to the Board of Trustees in which they outlined some of these thoughts:

"The architecture of the buildings and grounds in 1933 will illustrate in definite form the development of the art of architecture since the great Fair of 1893, not only in America but in the world at large.

"New elements of construction, products of modern invention and science will be the factors of architectural composition. Artificial light, the tremendous progress of which has astonished all designers in recent years, will become an inherent component of the architectural composition. The extraordinary opportunities of the site for the use of water as an intrinsic element of the composition will be developed to the maximum".

Site and Building Layout

The architects looked over the suggested site on the lake front, and found it different in shape from that of any previous exposition. It was long and narrow—about three miles from end to end, and it varied in width from about 100 yards to half a mile. It was all "made" land, which a few years before had been fathoms under the surface of Lake Michigan. An island of about eighty acres—Northerly Island—lay abreast the mainland from 12th Street south; an addition, yet to be built, would carry it as far as 23rd Street. Between the mainland and the island was a lagoon.

The architects were told they could develop plans as they thought best. They went back to their respective offices and studied the problems of site and building layout. It was an assignment such as an architect seldom receives. The site, as to size, shape and location, was still indefinite, for while a location in Burnham Park had been promised, many months were to elapse before enabling legislation and a South Park Ordinance would convey a right to use the ground. An assumption that a fill might be made on Northerly Island to round out the queer, re-entrant angle on the southeast side caused a misconception of the available area, and resulted in an abandonment of the first ground layouts.

A harbor line had been established by the complicated, four-party "Ordinance of 1919", which would have required years to change. Not even an approximation

could be given of the amount of money that would be available, and conjecture as to the number, size, and use of prospective buildings would still be years in coming. It was as indefinite a problem as architects have ever been called upon to solve, and it is not to be wondered that it was late in 1929 before their plans bore any resemblance to what actually transpired.

Establishment of Definite Style

To achieve startling originality, a prime requisite in a world's fair, the imagination was given full sway. With heads in the clouds there were dreams of jeweled skyscrapers, pits a mile deep, moving sidewalks, and chains of picturesque islands strung pearl-like along Lake Michigan's shore. This was in the early days of 1928 and 1929, during those first meetings in the studio atop the Burnham Building where carved in stone over the massive fireplace was the inspiring charge of Daniel H. Burnham, builder of the World's Columbian Exposition of 1893:

"Make no little plans— They have no magic to stir men's blood and probably themselves will not be realized— Make big plans— Aim high in hope and work remembering that a noble—logical diagram once recorded will never die—but long after we are gone will be a living thing—asserting itself with ever growing insistency— Remember that our sons and grandsons are going to do things that would stagger us— Let your watchword be order and your beacon beauty".

Through the years that followed dreams dissolved in favor of practicalities and the pattern was gradually fitted together. But there were many pieces which, while good of themselves, did not belong; some too costly, some impractical, some that just did not fit. Much of the study of the first two years indicated what not to do. Real progress was made when the great truth dawned that if something had been successful at a previous fair, it should be scrutinized all the more cautiously if its use was contemplated at A Century of Progress. If it were the correct solution for one set of conditions, the probability was it would not meet the needs of a quite different set. The few times that this was short-circuited in favor of precedent brought regrets. Since the great fairs of the past there had been radical changes in physical conditions and ways of thinking. Differences in climate, location, transportation facilities, method of financing, management and media of publicity made the problem one for original study. Above all, people were more traveled, more sophisticated, less easily thrilled.

While all this was borne out by the experience of operation, there was one factor which failed to receive its due weight. Through the ages, human nature does not change basically. In the constant quest for that which was new, many things which are forever new were overlooked, the simple, homely things which have stirred the emotions from time immemorial. While a realization was dawning, it did not come in full force until early in 1934, when a circus was tried out on the lagoon theater. Engaged as a filler for a week, it remained all summer as one of the best attended attractions. Ponies jumping through hoops to the cracking whip of a high-hatted ring-master. Dogs walking on their hind legs and

turning somersaults—Farmer Corntassel with his mule and a red-bearded policeman. Slapstick comedy which had brought the same gales of laughter from their great grandparents.

As they struggled through 1928 and the early part of 1929, the Commission's first efforts were on a general style and ground plan.

Inspired by a desire to summate these attributes, the architectural commission labored through a maze of classical and modernistic design. Their firm establishment of a definite style was their greatest achievement.

Each submitted an independently arrived at scheme for the consideration of the group, and it was decided to select the best elements of each suggestion and combine them as far as possible.

The Plan Asymmetrical

All of the early sketches had stressed vertical architecture, and all were symmetrical, following in this respect the tradition of former expositions. It was a dramatic moment in the history of the Exposition when, at a meeting of the commissioners in the fall of 1929, Raymond Hood presented a plan radically different from any that had been previously submitted. It was unsymmetrical. The balance of tower with tower and pillar with pillar was absent. The decision to accept it was made, not without much discussion, for its fundamental soundness was manifest. And so they embarked on a radical departure in exposition architecture, as they broke from the time-honored traditions of balance and classical symmetry. It was prompted by a desire for an architectural style which was practical for the utilization of the new materials of construction and better adapted to the geography of the site. Yet its most important attribute lay in the fact that an asymmetrical plan permitted an unprecedented elasticity.

When the clouds of financial uncertainty rolled up in the years that followed, it permitted a maximum of flexibility in the utilization of scant resources. It did not demand the slavish adherence to the previous commitments of the symmetrical plan where features must be duplicated. In the words of Ralph Walker, "If you would express the aspirations of science in a general composition, that composition must express the variety of science". Had this decision not been made, it is difficult to see how the task of completing the Exposition could have been successfully accomplished.

The flexibility of the asymmetrical plan proved its value in other respects. Intensive studies of the city's arteries and transportation facilities adjacent to the site indicated strategic locations for entrances, but these had to be co-ordinated with the crowd-circulating system within the grounds. In addition it was realized that both would have to be adjusted after they had been subjected to the test of the crowds. It is easier to conform to the natural movement of masses of people than battle to get them to move as you might think best. The final boundaries and shape of the site were not fixed until many buildings were under construction. The non-rigid ground plan made it easy to alter the area without doing violence to work already in progress.

Building Heights

Exposition buildings were designed for two primary requirements, the first, to meet the demands of exhibitors who were to purchase space in them, and second, to offer the maximum in comfort and convenience to the visitors. These were coupled with the problems of producing an exterior of interest-compelling beauty, at a cost of construction so low that they might be amortized in the few months of revenue producing operation.

To achieve an imposing and stately beauty the early sketches of the buildings for A Century of Progress were towering structures of many stories. To meet the objections of exhibitors, whose experience had taught them that visitors would not go above the ground floor, ingenious devices were conceived to maintain an equal flow of traffic at the different levels. Principal among them were elevated entrances which would bring the visitors in at an upper level by an overhead intramural transportation system. Ramps with gentle gradients and with exhibits on either side were to lure visitors to upper levels. Balconies with comfortable seats and gay flowers were to entice them up for a better view over the grounds, and thence to the exhibits on the upper floors.

Practical considerations forced the elimination of most of these plans, and experience in the construction of the earliest buildings showed the way for later ones. In spite of a ramp and the moving stairs of a modern escalator, the second floor of the Travel and Transport Building proved disappointing. Few exhibitors were willing to risk the hazards of a second floor; and this, coupled with the greater heat and an access which was not natural, caused its virtual abandonment the second year. On the other hand, the second floors of the Hall of Science and the General Exhibits Group proved of equal interest to the first.

Largely contributing to this were the science exhibits, the real keynote of the Fair, located on the second floor, but the buildings themselves were admirably designed for the dual levels. A third floor in the Hall of Science was not opened to the public because of the fire hazard. The solution, which finally proved to be the best, was a half second floor somewhat like a mezzanine, where exhibits and visitors might be seen from one floor to the other, thus inducing vertical movements of traffic.

Size of Structures

No problem was more perplexing than that of size, and almost invariably original designs of a building were far too large. The greater the space the more difficulty there would be in filling it with creditable exhibits, especially of a category, and great restraint was required to refrain from filling vast vacant spaces with exhibits of poor quality or out of character. What few objectionable ones crept in to the Exposition were largely attributable to the horror of a partially filled building.

The General Exhibits Group was a satisfactory answer to this dilemma. Built in a series of similar units, a few at a time, it could be extended to meet the

needs that eventuated. Having ceilings of varying heights and an interior column arrangement giving maximum facility in accommodating exhibit booths of different sizes, and with many prominent entrances, it proved attractive to exhibitors and visitors alike. It was a solution to that difficult architectural problem of providing a structure capable of indefinite expansion, yet highly usable, attractive, and appearing finished at whatever size it happened to be stopped. Flexibility must be the dominant factor in exposition building design.

Windowless Buildings

Sunlight for daytime illumination of buildings is a variable factor. Windows sufficient for a bright day give a cathedral-like gloom on cloudy ones. In large buildings there is a wide difference in light near the walls and in the center of the rooms, and there is difficulty in stepping up the intensity of illumination near entrances where the eyes of visitors have not yet become adjusted from the bright light outdoors. Sunlight frequently comes from the wrong direction, shining into the eyes, rather than upon the objects it is to illuminate.

Artificial light gives a controlled effect; exactly the correct amount of illumination, whether it be general or to accentuate a particular spot, may be determined by the use of photometers. Each area in a building may be studied for its proper light balance, each exhibit may be set off to the best advantage, and objectionable shadows or glare may be eliminated.

But, in addition, windowless buildings effected an important economy in construction and permitted a more flexible arrangement of interiors. Sash and windowglass are expensive, and entail considerable labor in setting. Long strips of factory-made exterior wall material, in standard widths, may be economically and swiftly applied on evenly spaced studding that runs without break from ceiling to floor. It permitted great flexibility; a building might be altered or enlarged to accommodate an exhibitor and do minimum violence to the original design. It offered a better opportunity to mold buildings to fit the peculiar nature of the site.

The desirable intimacy of the closed booth for the best showing of exhibits could be had without considering window-spacing—a particularly important point when a building must be designed before the size and shape of the booths have been determined. And, of course, it gave more wall space for diagrams or hanging exhibits. The elimination of skylights and windows offered an unprecedented opportunity for bold adventure in the decorating of interior surfaces, even as it complicated the problem of exterior treatment.

Windowless buildings require additional wiring and ventilating systems. But at A Century of Progress this did not entail extra expense, for the buildings were kept open until ten o'clock at night. Forced air would have been necessary, anyway, to relieve the oppression of the summer sun and to give fresh air to the visitors, who frequently swarmed every nook and cranny.

In restaurants, utility buildings, and various other structures through the grounds, windows had their place. It must not be assumed that under certain

conditions windows are not better adapted for exhibit display than artificial light. For instance, in an indoor horticultural display only the sun can give flowers their delicate hues.

Use of New Materials

In their normal development, innovations in building construction are slow in finding general public acceptance. Architects are loath to specify for their clients untried materials or methods, especially in permanent buildings, where mistakes may point an accusing finger for many years to come. Without elaborate advertising campaigns new things are slow in achieving public attention. A Century of Progress offered a unique opportunity to serve as a testing ground. Both the theme of the Exposition and the dictates of economy indicated that the latest which science had to offer should be an integral part of the physical layout. Developments which did not prove up in service would be demolished and forgotten in a few months. Those which did would be brought to the attention of millions of people.

Prior to 1930, the research laboratories of the large corporations had been working at top speed to meet a highly competitive field. With the cessation of general buying, occasioned by the depression, the talent in these organizations became available for a consideration of the Exposition's problems, and were ready and eager to tackle the task. Working in close cooperation with the staff of the Works Department, literally hundreds of innovations were developed to meet the Exposition's special needs.

New wall coverings and methods of fastening; unheard of uses of standard materials slightly altered for a new role; raceways for electric conduits of low cost and great ease of access; water pipes of amazing thinness, welded in the trench; bar joints; roofing and flooring materials; indirect gaseous tube illumination for architectural effect; and a host of others found their places. Not all were successful, but many made outstanding contributions to construction and greatly influenced future projects. But it is certain that, in the aggregate, they effected a saving of hundreds of thousands of dollars, and gave such promise as to be accepted and followed almost in their entirety by exhibitors and concessionaires in their own buildings. That large corporations were willing to embody them in their own construction gave promise of their permanent value.

Taking into consideration the diversity of the requirements, such as short life of building, probable need of alteration, adequate fire resistance, foundation conditions on the site and severe lake front weather, comparative cost studies were made of various types of construction. They pointed to the use of construction methods and materials permitting a maximum employment of machinery during processing and erecting in order to avoid the greatly increased cost of hand labor. Particularly to be avoided was hand shaping in the field, so, wherever possible, material arrived on the site in such form as only to require setting in place.

A standard steel frame for the buildings was adopted with connections and end plates in place, riveted at the mill, and field connections were bolted, where prac-

tical, in order to facilitate demolition. However, rivets and welding were frequently used. Wall coverings which could be applied in large sheets, such as gypsum board, plywood, transite and sheet metal, were adopted. The difficult problem of weather protection, which they presented, was solved in ingenious ways, principal among which was the thorough impregnation with a priming material at the mill.

Effects of Finances on Architecture

The first buildings were erected from the original proceeds of the bond issue. The Administration Building was the initial effort, suggested by the desirability of the staff's actually working on the grounds, and also by the dictates of economy, as the rent saved from loop offices would be sufficient to amortize its cost. Fort Dearborn was second. It was selected because it was believed that in any plan its log walls, contrasting with the skyline of Chicago, would best epitomize the hundred years of the city's development. Opened to the public on May 16, 1931, at a small charge, the revenue from pre-Fair admissions nearly equalled the sum expended on it.

Next came the Travel and Transport Building, inspired by overenthusiastic hopes of substantial support from the transportation companies. Its location presented a more perplexing problem, and became the subject of much serious discussion. To assure a better grouping of large buildings with limited funds, the 23rd Street area, or the southern end of the Island, seemed a more logical place than 31st Street. It took courage and confidence to place it nearly two miles from the nearest structure then in contemplation. How could the intervening ground be filled? The wisdom of the decision and its far reaching influence became evident as the opening date neared. Without the substantial evidence, which this location gave, that the Exposition believed that an area the size then outlined could be filled with people, it is highly doubtful if exhibitors could have been persuaded to erect the magnificent structures that were grouped near it, and inevitably the size of the Exposition would have been materially reduced. Caution had to be tempered by courage.

The Hall of Science, originally conceived as a building for general exhibits, became the third, and last, of the structures largely financed from bonds which had been sold for cash.

The rest of the Exposition's own structures were built mainly with moneys received from the sale of exhibit space, with bonds taken for services and materials and promissory notes to be met out of operating income. These are fully discussed in the chapter on financing, and are mentioned here only to indicate their effect on architecture and construction.

A large portion of the exhibit space was paid for when the contract was signed; in some cases as much as two years before the Exposition opened. In effect, this created a revolving building fund. With money received for space in buildings, such as the Travel and Transport Building and the Hall of Science, other buildings could be erected. This plan proved so acceptable in practice that eventually

exhibit space was selling not only in buildings under construction, but in structures not yet started. As a matter of fact, before the foundations were laid for the Foods and Agriculture Building and the General Exhibits Group, \$600,000 had been received from exhibitors who had purchased space in these buildings.

Building Details Follow Actual Needs

The development of the details of the architectural plans followed actual needs as they arose, though at times this precipitated a struggle between the practical and the aesthetic. The primary need was for exhibit buildings, so the greatest consideration was properly accorded them. Each was designed from the inside out, but built from the outside in. Painsstaking care was exercised in developing architectural details contributing to the best display of the exhibits—still an indefinite quantity, for no one could yet see specific exhibit needs. But there were many fundamental conditions applicable in general, and permitting of later changes, as experience and circumstances demanded. In previous fairs the major exhibition buildings had been designed for their outer architectural effectiveness without specific consideration for the use of the interior space. The exteriors of the buildings of A Century of Progress were designed to conform to the probable interior usage.

This study included such items as ceiling heights, aisle widths and arrangement, column spacing for booths, supply of various utilities, circulation of crowds, ease of ingress—and how to make the visitor comfortable. If he were physically at ease, and could be given some respite from the foot-sore miles, so much the greater his ability to assimilate whatever the exhibits had to offer. For such as he, lounges, rest rooms, protection from inclement weather, ramps, and easy stairs were planned. In turn, and concurrently, all these became subjects of the architectural hour.

While the interiors were studied first, actually they were constructed last, but based on known and average needs, an exterior was designed which would not do violence to or prevent a final interior arrangement acceptable to future purchasers of exhibit space. So the original contract on practically all exhibit buildings was let for the foundations, exterior walls, and roof only. Subsequently, and in some cases more than a year after the exterior had been accepted, contracts were let for interior wall covering, flooring, partitions, insulation, electric wiring, and other utilities. This system permitted the major part of the work to be out of the way, yet held off until the last moment the interior arrangements, when exhibit plans were better developed. The preliminary studies gave a "shell" with the utmost flexibility to meet exhibitors' needs. It also meshed in with the financial scheme as it broke contracts into smaller units, which could be met with funds in hand.

Flexibility the Great Need

It was not always possible to anticipate all the factors involved. For example, in the Hall of Science, the space arrangement left much to be desired in placing science demonstrations logically and in sequence. It had been originally designed

for other purposes, as it was first contemplated that the Hall of Science would be astride the 16th Street bridge over the lagoon. However, in such instances, early deficiencies in planning for unknown exhibit schedules were simply a challenge to meet the emergency by other means. The price paid for this once in a while was staggering, notably in the Electrical Group.

In buildings of later design, such as the Foods and Agriculture and those of the General Exhibits, better preparation was made to meet developing conditions, some normal rearrangements, others exasperating, and to allow for considerable expansion without adversely affecting the architectural design of either the building or the surrounding group, if the sale of space justified it.

The need of flexibility was illustrated nowhere better than in the States Building. Rather than have separate pavilions for each state it was early decided, in the interest both of economy and architectural harmony, to house all in one great building, assigning to each self-contained sections varying in size from 2,000 to 10,000 square feet. This arrangement, so different from the individualistic displays of previous expositions, was readily accepted. Grouped around the Government building these states sections seemed to epitomize the Federal Union, and to give architectural expression to a national thought.

The original plans were drawn for twenty-eight states, and this may have been a little optimistic in the light of state participation in other fairs. Before the building was completed, there were forty-four states which had taken official action looking towards participation. Not daring to believe that all of them could consummate their plans, the design was increased to accommodate forty states. As the depression deepened and the various commonwealths felt its force, it became obvious that fewer than this would actually present exhibits, so the plans were changed again to thirty-two states.

This elasticity of design, which permitted a constant shifting to meet actual conditions even after construction had started, was a strong factor in the eventual ability of the Exposition to close with a surplus.

In the intelligent execution of the architectural plans, no better trio could have been found than C. W. Farrier, Louis Skidmore, and N. A. Owings, who brought to their problems a freshness of approach, an enthusiasm, and a skill that often approached the miraculous. When the design days were past, each took up other duties at the Fair where they were equally successful.

The "Necessity Policy"

Many months before the actual construction began the "necessity policy" was initiated in the architectural field. Lists of all structures desirable were made in the order of their preference. They were divided into three classifications: first, those necessary before the gates could open; second, those which would so much improve the plan of the Fair that they would assuredly produce an income above their cost; third, those which were in the nature of embellishments and refinements pleasing to the eye. Every proposal was measured by the "necessity" yardstick, and as funds became available they were allotted on this schedule.

It was inevitable that there should be suggestions made for novel and complicated devices. Among those which seemed worthy of detailed study were a geologic mountain, moving sidewalks, a monorail intramural transportation system, and routing the buses through the second story of buildings and on viaducts to assure that upper floors would be visited, and to afford traffic separation.

They were eliminated either because of the expense which would have been out of proportion to the benefit or because of the uncertainty of their operation and the cost of maintenance. It was well enough to experiment and pioneer on items which would not jeopardize the functioning of the Exposition, but on utilities and essentials there must be certainty of continuous operation. With the daily crowds of an exposition there can be no time-out for repairs, and nothing to cause apprehension. Though the rocket cars on the Skyride stopped only a few times, those stoppages caused considerable agitation.

Much publicity was given in the early days to a "chain of man-made islands". A letter apparently serious, from an Alabama farmer, caused much amusement. It read, "I see in the papers that you are going to build a lot of islands. Well, I have a lake on my farm, and in the middle of it there's an island about two acres in size which I would be glad to sell you cheaply, as I have no boat or bridge to it." The obvious answer of "F O B site" was not made.

Visits of members of the staff to foreign expositions had created a strong sentiment against numerous, small detached buildings, so common abroad as well as in previous American fairs. Every effort was made to eliminate the "hot dog" stand type of equipment. Outdoor concession booths were grouped in banks of six or more, and styled to conform to their surroundings. Ticket booths, kiosks, utility buildings, and the many small structures necessary to the operation of a fair were, wherever practical, similarly treated. A minimum size was set for free standing buildings, constructed by either exhibitors or concessionaires.

Little Change from First Plan

Although many dreams had crashed to earth, there were, on the opening day only two structures missing from the grounds which had been on the clay model of the Commission's ground plan in 1930.

It had been a fond hope to have the Hall of Science stand in the middle of the lagoon. The early design was so drawn, but in estimating the cost it was obvious that it could not be done without sacrificing other essential construction. The result was that Paul Cret's building on the shore was utilized for the Hall of Science.

The second item, and keenly desired, was Ralph Walker's Tower of Water and Light at the south end of the lower lagoon. This was sketched as a lofty structure, cascading water down the length of its three surfaces, and would have been an impressive edifice. Because of its great cost, which could not be met through sale of space within it, and the hazards of the technical uncertainties inherent in such large quantities of water, it remained unbuilt. At the same time, the plans for the Skyride took definite shape and form.

From the standpoint of beauty the Skyride could not substitute for what the Tower of Water and Light would have been, but it served somewhat the same purpose in the architectural plan by affording a dominant feature and by arousing public interest in its unusual construction.

During the construction period many harsh criticisms were directed at the architecture rising in embryonic nakedness. To the Administration building was applied the criticism: "a factory building with a wash-board front and with paint peeling as though with leprosy", and to the Travel and Transport Building: "a gas tank coupled to a barn".

Public acceptance was slow, for the style depended on completeness to achieve its effect.

On opening day the public response was more of awe and amazement rather than an appreciation of beauty but, as the summer wore on sentiment gradually changed.

An interesting comment, made more than once was "The 1934 edition is much more beautiful than the 1933 Fair". It is doubtful if the improvements, as important as they were, could accomplish so great a change. It is more probable that as people became used to the style and, through much association, had become friendly to it, those things which at first seemed grotesque or shocking, became lovely.

Appreciation of beauty is influenced by habit and association. Of course, there were many who remained unconvinced.

COLOR VITALIZES ARCHITECTURE

Carnival of color, brilliant and startling, was the flame that caught and blended into one dramatic whole the strangely structured and informally arranged architectural plan of A Century of Progress. Color was the common denominator of the outward and visible aspect of the Exposition. It gave life to materials not inherently attractive and provided the bright setting and fiesta spirit so essential to a world's fair.

Every architectural era is a summation of the solutions of the problems confronting the people of its time. Since available materials and methods of construction radically affect its form, the machine age produced fundamental advances in both.

The architect of each of the Exposition buildings interpreted these new materials in an individual fashion. Without the classical factors of columns, cornices, and porticos in the composition such as had correlated the structure of other American fairs, and with a general style which resolved itself into a study of mass and silhouette, something was required to give it unity. The gay blending quality of color was the covering answer.

Study had been given to the color of former expositions. White which blazoned the Columbian Exposition as the "Great White City", creates a glare in the lake front sun that becomes trying to the eyes. An architecture of great surfaces requires color and variety of color for emphasis and interest. The imitated stone in travertine buff used at the 1915 San Francisco Fair was not suitable here where color was to be used as a material and not to imitate a material. The pastel shades

of other fairs received more serious consideration, but, lacking resistance to the sun, these soon fade and show dirt and stain.

Paint Becomes an Architectural Asset

Turning the drab necessity of paint into an architectural asset was considered from the beginning, and color was destined to be used for its own intrinsic value as an architectural medium and as an integral part of the design. Actually, the cost of coloring brilliantly for effect was little more than would have been the cost for protection and simple sightliness.

While the concept was positive, the solution was elusive. Never in modern times had color been used for its architectural potentialities on such a scale. On interiors, such as theaters and restaurants, much that was satisfying had been accomplished, but on the whole the Exposition presented a pioneer endeavor.

As we hum the aria of an opera, few of us are conscious of the technique in its composition or that it is following well-established laws. So it is probable that few visitors to A Century of Progress realized that each color was selected for a definite purpose and that their juxtaposition, repetition, and transition were far from haphazard, but meticulously considered for their individual and massed effects. The psychological effect of colors has been well established, those on the blue and green end of the spectrum being restful and those on the yellow and red end being stimulating. Each color has a specific quality of its own, yet several can be composed to produce harmony or modification. Where there is transition from unit to unit a proper modulation is possible to balance or complete the theme.

Through the medium of color, the form of each building was emphasized, accentuated, or softened; groups were coordinated; and the whole was articulated into a unified composition. It was a three-dimensional problem of interrelated masses existing in space, subject to vistas and avenues of approach from many directions, as well as being a changing panorama a mile or more in extent.

Since color was to give vitality to the mass, pigments of the strongest and purest hues were sought. For each locality, the color was planned to suit a mood; an exciting red at an entrance or a restful green at an assembly court. And colors were selected for their reaction to natural light; blues for the shadows of a north facade and perhaps a yellow for bright sunlit areas. The quality of colors to reflect the flood lights at night was almost as important as their day-time effect.

The elements of the scheme may be summed up by, first, a selection of colors for their architectural integrity; second, their application, not as ornamental details, but in great blocks in hues of strong definition accentuated by such neutrals as black or sky gray; third, a plan having sequence in the application or color with definite points of rest and arranged continuity.

All this was the patient work of many men and not crystallized until Joseph Urban became the guiding genius, but the struggles during the formative periods are an essential part of the story.

The first experiment in color was the Administration Building, and it proved a sorry one. It was gay with its graduations of green-blue bands on the wings around the center block painted solid in the darkest shade of green. But soon the lack of affinity between oil paints and the alkaline and lime content of the uncured asbestos board caused peeling, and there appeared great stains due to the exuding of the asphalt impregnation of the insulation between walls.

With the disappointing experience of the Administration Building, it was determined that a specialist should be found who would concentrate on the color and paint problem. So, in January of 1931, the color section was formed. Its first efforts were devoted to materials and a study of the experiments which had been carried on by members of the staff in conjunction with their other duties. Later, in consultation with the architects of the buildings, studies were made and paint applied to the Travel and Transport Building and the Hall of Science.

Urban's Daring Color Schemes

Although these buildings were attractive in themselves, there was no continuity in what had been done, and there was no general scheme to guide the color of future buildings. When the Architectural Commission met in January of 1932, the problem had so resolved itself that they recommended that Joseph Urban be invited to present a general color scheme for the Exposition, including the correlating of all decorative effects on the grounds. His wide experience as a creative artist in color and scenic design gave him the courage to lay out a scheme as startling as it was brilliant. Only a master would have dared go to such extremes, for here were laid out such colors as never before had been seen in architecture. All previous discussions had been on schemes of more subdued colors and milder contrasts, but there were no compromises here—you would take it straight in forthright doses and like it, or you would not.

But it was to be Urban's last great work and from his death bed he put the final touches on the great panorama of color, which he was never to see finished. It was an ephemeral monument which has already passed away, but the memory of it and its influence on the future will long remain.

Mr. Urban's palette consisted of twenty-three colors, all of the brightest intensity. They were: white; sulphur yellow; chrome yellow; light orange; dull Persian orange; dull vermilion (almost terra cotta); bright vermilion; blue carmine; tomato bisque pink; brown red; greenish blue; peacock blue; true blue; ultramarine blue; dull dark blue; emerald green; peacock green; turquoise blue; blue gray; black, aluminum, gold and gray. Seldom were more than five of these colors used on any one building, and usually only three or four. Approximately twenty per cent of all painted surfaces was in white, twenty per cent in the blues, twenty per cent in the oranges, fifteen per cent in black, and the remaining twenty-five divided among the yellows, reds, grays and greens. Solid colors were designed to emphasize the building block system, for the style of architecture required firmness of treatment in harmony with the definiteness of

its unornamented form. Mr. Urban assigned Otto Teegan to represent him in Chicago, and to act as his field agent in carrying out his plans.

The interior of buildings was largely an exhibits' problem, and so came under a different department, but the work was done in close cooperation with Mr. Urban—and later his assistant, using much the same palette, and was applied under the same contract as for the exterior. Painting of interiors proceeded with that on the outside and gave a reserve of work for inclement weather.

The technical problems involved in obtaining proper materials and in finding economical and satisfactory methods of application received intensive study during the late summer of 1932. Much preliminary work had already been done, which proved invaluable in meeting the specific problems of the finally determined scheme. For two years, a "bone yard" had been maintained on a balcony of the Administration Building, where paddles, painted innumerable hues and from many sources, had been exposed to sun and weather. Usually three weeks established the resistance of a material. Although many samples had been submitted to weathermeter tests, no laboratory existed with adequately unfavorable conditions.

While the action of sun and rain could be simulated and their effect accelerated, the chemically complex equivalent of Chicago air defied reproduction. Later, samples were applied to large areas of the buildings, as this gave a uniform test for each product under exactly the conditions that would be met. These checkerboards of colors caused such consternation among passersby that the information desk was kept busy explaining that this was not the color scheme.

Some Paint Problems

Urban's palette must be matched, a task which brought paint manufacturers almost to despair. The colors must remain bright and clean until the end of the Exposition in spite of severe climatic and atmospheric conditions, for they would be subjected to great variations of heat and cold; to wind and rain; heavy condensation of moisture due to thin construction and the difference in temperatures inside and outside; and to air laden with the soot and sulphur of a great manufacturing and railroad center.

The paints were to be applied to a wide variety of materials: gypsum board, asbestos-cement board, plywood, masonite, metal siding, rough timbers, steel, galvanized iron, cast iron, concrete, stucco, plaster and roofing materials, each requiring a different treatment and many so new in construction that experience gave insufficient data on their reaction to paints. A tremendous area, requiring some 15,000 gallons of paint would have to be covered in less than three months. Because of abnormally inclement weather only thirty-three working days were actually available.

Three major buildings had received preliminary coats of paint, and data gathered from these experiences served to focus the difficulties for the final study. Among the problems with which the painters had battled were sandstorms, rain, insects, and temperatures which blistered the paint on the metal sidings.

In the fall preceding the Fair, it was found that all buildings would require further protection over the winter, for some of the gypsum board and plywood were already blistering, and the metal siding was corroding at the joints. Aluminum paint was an effective sealer and would make a splendid base for the final job. Its application was made possible by the American Asphalt Paint Company, which arranged to accept promissory notes payable out of operating receipts for the work.

So stringent was the financial situation at this time that warning was given that the aluminum paint should be well applied, for, if the worst came to the worst, it might have to remain as the final color. Bleak and gray the buildings stood, and as someone remarked, "They look like a fleet of battleships scuttled in the mud of Scapa Flow." Later, Grover M. Hermann, President of the company, offered to extend the contract on the same basis for all the remaining paint, and, since the products of his company had stood exceptionally well in tests, the execution of the color scheme became assured.

The use of oil paints was so standardized that only the task of matching pigments and the applying of fading tests under actual conditions were necessary, but on the suggestion that casein paint—new and almost untried in this country—be used, much pioneer work had to be done. It seemed to offer unique possibilities for an exposition, though no records were obtainable on its use outdoors on a large scale in this country. While a cold water paint, it differs materially from calcimine, which uses glue as a binder, in that it makes use of casein—a dairy product. It has the attribute of drying within a few hours, a quality of great importance as rains might be expected almost daily during the spring and there would be a shorter period of danger from the myriad of insects and the wind-blown sand.

Painting might start immediately after a rain as the casein adheres best to a wet surface. Once dry, rain merely washes away a little of the outside surface, taking with it any accumulation of dirt, and leaving the color in almost its pristine brightness. Because of this, it is in no sense a preservative paint, but recommends itself particularly to temporary structures, especially where clear pigmentation is an important factor. It covers well in one coat since there is a large proportion of pigment in casein, as the inert materials for thickening purposes in oil are the covering pigments in casein.

Pigments are not so transparent as in oil and hence give a fuller tone and better reflective values in daylight. With its non-glassy mat texture, casein gives a more even illumination without bright reflecting points in night flood-lighting. Paints with other binders such as soy bean oil and china wood oil were subject to experiments but did not meet the Fair's peculiar requirements.

Union rules prohibited spraying with oil paint and limited the size of brush to four and one-half inches. But spraying, which enables three times as large an area to be covered in a given time, and a ten-inch Dutch brush, were permitted with cold-water paint, suggesting a great saving in both time and cost of application. The spray, however, did not prove successful, as too much paint

was blown away on the windswept lake front.

The experience of the two years of the Exposition proved casein paint eminently satisfactory within its limitations. As a matter of fact, by September of the first year of the Fair, nearly all colors looked as fresh as when applied. The dark green blue showed the worst fading; the yellow tended to lighten and lose some of its orange character; one of the reds and one of the greens became somewhat transparent and would have been unsightly had there not been an undercoat of oil paint of the same color. While little of the deterioration was unsightly, a small amount of repainting was done about this time.

Most of the exterior colors required at least two coats over the aluminum priming. The undercoat of the designated color was generally in oil, serving as a protection to the surface and a color reinforcement, for the overcoat of casein. This procedure fitted in well with the terms of the contract which had a limitation on the amount of casein which would be furnished.

Cooperation of Exhibitors

Color schemes for the structures of exhibitors and concessionaires followed the lead of the Exposition's general plan. In some instances schemes were prepared for them and in others suggestions given. They all gave a full measure of cooperation, though in a few instances, after some confusion. For example, the general scheme for 1934 designated for one building the trademark colors of that firm. It was not to be wondered that a competitor objected when he was not permitted to use his own colors. But a solution was found by changing one color in the building and repainting the ring of the 23rd Street entrance.

Miscellaneous structures, and what became generally known as "gadgets", some decorative, some utilitarian, including boat landings, light fixtures, shelters, banners and flags, all received the attention of the color section. Awnings and umbrellas, especially those of concessionaires, presented a problem. Solid colors or the use of stripes, the full width of the material, was insisted upon. The use of a lot of reds was discouraged, but colors were not required to match the general palette exactly.

The painting contract was unique in its provisions, for manufacturer and labor contractor were united. With the painters having direct responsibility to the paint maker, the old bone of contention was avoided, for the painter could not blame the material, nor the manufacturer the application. As far as the Exposition was concerned, it was to pay a stipulated price per foot for each color applied, to be figured on the number of "squares" (100 square feet) covered. Adjustments or unit prices were established for scaffolding, cleaning rusted metal, and, in the case of aluminum, for the material to which applied. Both exteriors and interiors of all buildings owned by the Exposition were included.

The remarkable air brush and water color sketches prepared by Urban for the general color scheme were supplemented for work in the field by special drawings. These were black-line prints with areas designated for color by key

numbers which corresponded to those on the palette, and the actual color usually applied to a portion of the area as a check. When the drawings and the work order had been given to the contractor for a building, or a group of buildings, there remained for the Exposition field supervision, inspection of the work, and actual measurement of the painting executed as the basis for payment. The total cost of the work was about \$285,000.00.

Through the spring rains the Fair burst into bloom, and the bold splashes of color which greeted the thousands on opening day seemed almost articulate with the spirit of carnival and joy, the very essence of a great World's Fair. But withal there was a satisfying harmony which expressed the Exposition's more lasting implications and purposes. Here was an architectural scheme of utilitarian modernity cloaked in the garments of festival. As the first reaction of amazement, and sometimes irritation, changed to understanding, color became to the visitor as definite a part of the Fair as the exhibits.

The 1934 Palette

As soon as the 1933 Fair had been battened down for the winter, thoughts turned to an even more attractive show for the next summer. So in December, Shepard Vogelgesang, who had had charge of interiors the year before, was assigned to prepare the color scheme for 1934. While he continued the basic principles of Urban, he developed a new palette and a radically different arrangement. It was felt desirable to give the Exposition a new aspect to those who had been frequent visitors the year before, and the experience gained suggested changes, such as the elimination of colors which had faded or did not reflect artificial illumination. Over the winter there grew a rather insistent demand that the Exposition be painted all white, but this was disregarded for the same reasons that it was not used originally.

The number of principal colors used in 1934 was reduced to ten from the twenty-three used in 1933. It was believed that ten color differences were as many as the public would be able to recognize clearly in one great panorama, especially as similar colors are easily confused later in the season when they faded unevenly. This was particularly evident with the four shades of orange used in 1933.

The colors of the 1934 palette were: a yellow; a red; orange; a true red, a blue red (nearly magenta); a turquoise or a ceruleum, which was distinctly green; a blue slightly on the blue side rather than the purple; a green slightly on the blue side; a gray violet; and black and white. These colors were distinct enough from one another by nearly equal differences to have individuality, and yet related enough not to appear harsh in combination with one another. That the gorgeous blue, which had been used on the semi-circular apse of the north face of the Hall of Science was missing brought sincere regrets from many.

The 1934 color scheme, built upon the framework of the previous year's plan, added to it a zoned color treatment which was new and effective. It emphasized vistas inherent in the architectural conception by grouping related

hues. Starting at the North Entrance, the exterior effect was white and red beyond the entrance. Red, blue red, and white were carried to and included the exedra of the Hall of Science. Red and orange colors carried across the planetarium Bridge and included the groups of the Foods and Agriculture and the Wonder Bakery buildings, and the Government and the States buildings.

The court of the Hall of Science established a green dominance repeated across the lagoon in the artificial "trees" of the Electrical Group. The circular court of the Electrical Group was dominantly white, held in massings of blue. Blue and green were repeated alternately on the north facades of the General Exhibits Group. The south facades were alternately white and yellow. The yellow tied in with a yellow motif established at the 23rd Street entrance, accented with blue. This yellow dominance, relieved by white and red, carried over Swift's Bridge of Service to the buildings on the south end of Northerly Island.

The Travel and Transport area, while predominantly white, still permitted buildings erected by the three motor companies to have characteristic schemes. White was used as the element of continuity between these and the Exposition's own buildings. Thus the Home Planning Hall, adjoining this group on the north, was white with accents of turquoise blue and yellow. The main Ford Building was white with accents of dark green, blue and yellow; the General Motors Building was white with an accent of red, contrasting with turquoise at the main entrance; the Chrysler Building, white accented in lavender and yellow, was balanced by the dome of the Travel and Transport Building. The two reds used on the Travel and Transport Building recurred in the smaller buildings on the Lake Michigan side of Leif Eriksen Drive.

Most of the building groups did not utilize more than three colors, thereby giving greater prominence to each color. The generous use of white established a transition and provided a foil, but was also used where form could be accentuated by shadows.

Certain colors in the 1933 scheme had been particularly disappointing at night, such as the dull dark blue on the north facade of the Hall of Social Science. During the season the intensity of illumination on this surface was multiplied several times, yet so much was absorbed that it remained an apparently unlighted area. In other cases the source of the light was reflected as unpleasant bright spots on an otherwise evenly illuminated surface.

In an effort to find a better solution for these difficulties an experimental laboratory was established to ascertain the reaction of colors and paints to night lighting. Much was learned as to light absorption, fluorescence, and the type of color of lenses and gelatin screens for floodlights to strengthen and vivify colors. But the results of the tests were inconclusive, as they did not parallel outdoor conditions where spill light from many adjacent sources of illumination must be contended with. Preliminary tests generally fail to indicate sufficient intensity unless due account is taken of the increase light level of actual operation.

Differing from the method employed in 1933, bids were taken from separate

groups of manufacturers and painting contractors. A number of paint makers were given a set of established colors and asked to submit wet samples for tests. Each was told to inspect the present conditions of the buildings before making recommendations and to submit the material considered most likely to give a satisfactory result for priming, for sealing and for finish coats.

The grounds were divided into nine sections for bidding on the paint application. The total amount of exterior painting on which bids were taken was 60,000 squares as compared with 80,000 squares executed in 1933, and on only 600 squares of interior painting, as compared with 25,000 squares executed in 1933. The total cost of the 1934 job was just over \$100,000.00 and, at the height of the work, there were some 1,500 painters engaged.

LANDSCAPING

All man-made efforts are subjected to adjectives and to differences of opinion, and so the Exposition's architecture was either modernistic or functional; its color was bizarre or stimulating; its lighting was glorious or spotty. Even the magnificence of Chicago's skyline, which was to form the backdrop for the new city by the shore, was not exempt, and evoked comments on its garish signs and dilapidated factory buildings to the south.

But few could find fault with Nature's offering to the stage setting—sunlit skies, Lake Michigan's many moods and colors, and the universal appeal of trees, flowers and grass. It became evident, however, that the last of these would require much assistance from man. Except for a narrow strip of planting along Leif Eriksen (now South Lake Shore) Drive, there were three miles of waste, relieved only by a clump of volunteer poplars on the Island, and a few struggling weeds and sunflowers on the mainland. It had been practically untouched since the sand dredge and the dump truck had "made" the land. The erosion of rain and storm waves had taken heavy toll along the bulkhead. The "fill" varied widely as to material; sand from Indiana, caisson clay from Loop excavations, and cinders generously intermixed with bed springs and automobile bodies.

Ramps and lounges might contribute to the comfort of the visitors, but what could be more alluring to the dog-tired than a shady bench, near a gurgling pool and a bed of petunias? Harsh and desolate would be man's best efforts without the aid of growing things.

Late in 1930, Ferruccio Vitale was made a member of the Architectural Commission, and began his studies of the landscaping problem. Due to illness,

Mr. Vitale turned over his task to his partner, Alfred Geiffert. Herbert W. Schmitt, who was associated with the firm, came to the Exposition and eventually became head of the Landscape Division. It was under his direction that the final plans were developed and the work done.

The Administration, Travel and Transport, Hall of Science, and Electrical Building areas, planted in 1931 and 1932, were the outdoor laboratories. So well did the trees and grass around the Administration Building flourish, and so much did they enhance the attractiveness of the structure itself, that former critics resolved to withhold final judgment.

The landscape plan must serve two purposes; one, to complement the architecture; the other, to impart the refreshing atmosphere of a garden. The color of the buildings would be stirring and the landscaping would accentuate it by providing a restful background. Shrubs and tall cedars would break the monotony of plain walls, and tubbed trees and flower boxes would grace the terraces. All plantings would be carefully and subtly adapted to the type and architecture of the building they would adorn, so that each spot would have its unique place in the general pattern. At night the ingenious use of light would transform the landscape into a brilliant new scene.

The asymmetrical architectural plan simplified the landscape design. It made possible the development of the area around each building independently of the others, without preventing a blending of all into a pleasing composition. There was less complication incident to the circulation of vehicular and pedestrian traffic which necessarily influences the layout of a formal plan.

Continual changes in construction plans, and the additions, deductions, and changes in the various units, as well as the shifting of sites for special buildings, rendered impractical an approved general design. However, a number of sketch plans were prepared, which served as guides to an ultimate goal of uniformity. Much preliminary work was done on scale models, where miniature trees and shrubs of green sponge could be "spotted in" until the right effect was attained.

Landscaping a Dual Problem

The real landscaping problem was not so much one of design, but of how to make things grow and how to obtain the necessary funds. It is obvious that the planting was not a self-supporting item, such as exhibit space. It would be essential that no major conflicts occur between the landscaping and the construction work and the installation of underground utilities. All might have to carry on together in the same area at the same time.

Throughout the entire schedule, thought had been given to the sub-grading and preparation of the lawn areas so that they might be ready to receive grass seed a month before the opening of the Fair. Here, again, coordination with the construction forces would play an important part in arranging the schedules of procedure, so that clearing the sites of the debris of construction would be completed prior to the time the lawns must be built.

The time element, therefore, became of the essence in the selection of plants

to make possible the effects desired. Plants, unlike brick, stone, wood, or metal, which may be readily manufactured to specifications, require time and patient nursing to insure the size and form desired. To assure an adequate source of desirable ones, a thorough and comprehensive survey was made of the types and varieties of plant materials available at the nurseries over a wide area. This information was gathered and compiled during the winter of 1931-1932.

Information was requested on plant materials as to varieties, height, spread, quantity available in each size, prices delivered f.o.b. Chicago, and prices delivered and planted. Using this information as a guide, a proposed list of plant materials was developed. The selection was confined to varieties that would react satisfactorily the first season after transplanting, particularly those with compact root system, and to those which would thrive under the climatic and atmospheric conditions of the Lake Front.

Without a complete planting layout, the quantity of materials required could not be definitely fixed. An approximation was found by estimating the acres of landscaping around the buildings called "intimate" areas, and the quantity of materials required per acre of landscaping in the areas between the buildings, called "general" or "park areas."

Upon completion of the material list, planting specifications were prepared for each item, covering in detail the methods to be used in digging, balling, transporting, preparation of planting areas, mixing of topsoil with peat moss, planting, guying, mulching, clipping, and pruning, preparation and planting of flower beds, and maintenance of all materials to June 1, 1933.

When the bids were received and analyzed, it was possible to determine just how far the Exposition could go in creating the restful, parklike atmosphere so much desired.

Soil was shipped from Southern Illinois by freight, unloaded at a siding within the fence of A Century of Progress, and distributed to the sites in measured trucks, thereby eliminating the difficulties of trucking it through the city.

Selection of Soil and Plants

The factors that entered into selection of the soil itself were fertility, proper texture to aid and stimulate root growth, freedom from weeds, and satisfactory price. The first order for five thousand cubic yards was delivered early in the fall of 1932 to various areas throughout the grounds for immediate use. An additional pile of nine thousand cubic yards was stored at 16th Street to provide for the winter and early spring needs, when it would be impossible to make delivery from the source of supply. In the spring of 1933 an additional delivery of twelve thousand, five hundred cubic yards was made for the balance of the planting and the lawn areas.

Peat moss, five thousand six hundred bales of it, was used freely as a soil conditioner, keeping the soil open and loose to stimulate root action. Peat moss, also has the quality of retaining many times its own weight in water, thereby aiding plant growth during the hot, dry summer days.

At the sources of supply the plants were each carefully picked, inspected and cataloged according to form, size and shape, and then reserved by marking the plant materials that would satisfactorily fulfill the requirements of effects and settings. Every tree was chosen for its particular location, thereby eliminating the problem and expense of reshifting and resetting.

More than sixteen hundred trees were planted on the grounds of A Century of Progress. All came from Illinois, except the cedars, which were brought from the East. Among the familiar native trees were the American elm, maples in variety, Lombardy poplars, lindens in variety, horse-chestnuts, American ash, hackberry, Wheatly elm, native hawthorns, junipers, arbor vitae, and small, tubbed catalpas.

Setting Out the Planting

Most of the tree planting was done during the winter and spring of 1933. Each tree hole was dug carefully three to four feet deep, for a ball of earth varying from seven to twelve feet in diameter and held intact by careful wrapping and strapping. These great leafless skeletons, varying in height from twenty-five to fifty feet, were loaded on special equipment, and moved through the city streets under police escort, during the early hours while Chicago slept. Sufficient prepared topsoil was supplied by A Century of Progress to take care of the future growth, and the trees were properly guyed and mulched.

The drainage of the tree holes in heavy clay areas raised problems. The usual solution, connecting the area to be drained to the nearest storm drain with either tile or gravel lines, could not be accomplished, as most of the storm drains were not laid sufficiently deep. Resort was made to a layer of gravel, or broken stone, in the bottom of each tree hole, with a dry well to receive the excess water which, when necessary, could be removed by the use of hand pumps.

More than twenty-five thousand shrubs of many sizes and kinds were puddled by hand and individually planted. There was twenty-four thousand lineal feet of hedging, mostly privet, forsythia, and Japanese barberry, and the delicate tracing of two thousand vines, including bittersweet, rambler, and matrimony vine, added charm to many walls.

The seventy-five thousand square feet of flower beds scattered about the grounds in various settings and combinations, afforded one of the most spectacular of the landscape effects. Here, more than anywhere else, color had to be considered, for the vivid hues of the Exposition buildings provided an unusual background for flowers. Considerable planning and study were required to obtain the right flower for each location. In various settings and combinations were beds of ageratum, marigold, petunia, salvia, vincas, heliotrope, begonia, dusty miller, snow-on-the-mountain, and geranium.

May, 1933, witnessed the final stage of planting—the lawn areas. Through studies of results of the year before, the time required for a green carpet was determined and a time schedule accurately laid out. Specifications gave in detail the mixing and spreading of topsoil and fertilizer, the preparation of the

seed bed, and the planting and maintenance of the areas until the opening date. The materials were to be furnished by A Century of Progress and the contract was let on an acreage basis. Lawn construction began with careful subgrading and spreading, to a depth of six inches, the properly prepared and mixed topsoil. A slow-acting fertilizer, which would not interfere with seed germination, was incorporated in the soil.

And Then It Rained

All was moving methodically on schedule. It was known to a day when the seed would germinate and just how high the blades would be on May 27. And then it rained. Day after day the planting was postponed; day after day, hopes were high that the morrow would be fair. Anxious calculations were made on how long the seeding could be put off and still have a vestige of green showing. It couldn't rain that long—but it did. With a horror of the sea of mud in which some other expositions had opened, there was a quick shift to sod. But could any such quantities be found and placed in the few days remaining?

It has been said that a primary requisite of success is the ability to get things done, and the Landscape Section was equal to the task. The sod started rolling in at the rate of 9,000 square yards per day, and feverishly men worked day and night that a carpet of velvety green might be ready on time. Its success was an epic of the Fair.

When the ground dried out sufficiently, some secondary areas were planted with a special mixture of rye grass, red top, blue grass and white Dutch clover. The first two require but six or eight days for germination and make a creditable showing in as little as three weeks. They also provide shade for the tender shoots of the blue grass and clover which are slower germinators but tougher and more lasting grasses.

Roads and Paths

Along its roads and paths the Exposition was also eager to demonstrate its theme. "Wear your old Shoes", the accepted slogan for all expositions, must be proven outmoded, and a new standard of comfort and cleanness achieved. The visitor should be able to get from place to place without lost motion, and have soft surfaces underfoot in the going. He should be able to keep his shoes clean and his eyes free from glare. Early in 1931 the area just south of the Administration Building blossomed with experimental sidewalks in all colors, sizes and materials. Long before they need be laid, it would be seen what types best conformed to the Fair's requirements.

Inside the building, the engineering staff was trying to resolve more difficult factors. The time element demanded the building of roads considerably in advance of the location of many of the structures. Even where the site of a building had been designated, it was impossible to determine its service area or entrances, as this hinged on the proportion of space which would have to be assigned to exhibits.

In the planning of walks, the economy of running them between buildings, as straight as possible, was weighed with the more decorative effect of designing them in harmony with the landscaping. The logical movement of traffic and whether it would be light or heavy was another debatable point.

Again, the answer was to select that which was absolutely essential and work towards it, basing decisions on as many facts as could be known, but, when the actual construction zero hour arrived, to go ahead on the best assumption possible to make.

Low Cost a Consideration

In common with all other utilities, pavements were designed with low construction cost as a major consideration, since it was believed that relatively large maintenance charges would be justified during their short useful life. Vehicle pavements had a 5-inch cinder base with a wearing surface 3 inches thick; pedestrian walks, a 3-inch cinder base and a 1-inch wearing surface. Wearing surfaces were of crushed stone precoat with a 60-40 per cent emulsified asphalt.

In parts of the area, the heavy, blue-clay nature of the soil made imperative a foundation material beneath the pavement base. Broken bricks and building material refuse, with some limestone rock was used on such occasions. In two areas, the dahlia gardens, and between the Moroccan and Belgian villages, brick walks were laid.

A heavy service road to the paper baling and refuse loading yard, and receiving depot, was paved with brick as protection against damage from the continual twisting and turning of heavy trucks and trailers.

As mainland building plans and traffic studies developed, it became evident that vehicular transportation could move most advantageously on the western edge, along the fence. A 26-foot roadway was constructed there, and Leif Eriksen Drive, a parallel road, selected as the main pedestrian walk. As each building, then, was located, paths were placed to connect it with both the roadway and the pedestrian walk.

On the Northerly Island this same layout was originally contemplated—that is, a roadway along the lake and one paralleling the lagoon, both stretching the entire length of the area, with connections to each building. The design of the Electrical, Social Science and Communications Buildings, together with the location of the Horticultural Gardens, however, modified that arrangement.

Landscaping by Exhibitors and Concessionaires

The exhibitors and concessionaires played an important role in the landscaping. All contracts for special buildings erected by others carried provisions for landscaping a prescribed area around their buildings in a manner approved by the Exposition. Most of these were veritable garden spots. Notable among them was the American Radiator Company's, the principal part of whose display was a luxuriant garden and cascade with towering trees shadowing lovely walks

lined with statuary. General Motors offered a delightful formal garden north of their building.

At various places through the grounds were other interesting floral exhibits sponsored by societies and growers, such as the Peony Garden by the Northbrook Gardens, which was in its glory at the opening of the Fair. Color was maintained throughout the season by the interplanting of later blooming perennials and annuals.

Gardens sponsored by the American Gladioli Society were located at the southeast side of the North Lagoon, at the southwest side of the North Lagoon, and along both sides of the avenue south of the Hall of Science, giving an extraordinary display of color and showing many rare varieties. This exhibit was one of the most extensive collections of gladioli ever assembled, growers from Vermont to California showing over three hundred and seventy-five varieties and using two hundred thousand bulbs to create the display. The Dahlia Gardens, near the Home Planning Group, sponsored by the Central States Dahlia Society, had an interesting exhibit showing the finest varieties.

Just south of the Belgian Village was the Alpine Garden—a half acre of wide paths, and terraces climbing up and down the steep hillside. Water cascaded to a pool at the bottom where water lilies floated and goldfish swam. Rare plants from Thibet, Greece, Japan and China, even the famous edelweiss, flowered in their new setting, and rock ledges of weathered stone gave no hint of having just been placed. Restful seats offered hospitality to those who would watch the noisy Midway nearby.

Garden Displays of States

The Exposition set aside generous spaces for those states which desired to dramatize their recreational features or augment their exhibit with outdoor gardens. Indiana installed a garden of formal design with a central pool containing a rare collection of water lilies, surrounded by statuary contributed by the State's sculptors. Michigan's garden offered hospitality; its welcoming hedge of petunias and its beach umbrellas and chairs inviting the visitor to rest and relax.

Minnesota presented an unusual scale model of Itaska Park, with its ten lakes reproduced to exact contour, and the headwaters of the Mississippi River simulated by a springlet. Hundreds of growing miniature trees gave representation to the great variety of species which thrive in the North Woods. Forest ranger watch towers, tourist camps, roads and streams were all to correct relative size.

Missouri elected to place its garden indoors. Here was shown in full size a modern concrete highway with traffic aids such as sign posts and cable guard rail. In contrast was a venerable "worm fence" with hand-split rails and a pioneer cabin, all weatherworn, but still serviceable. Just beyond was a winding brook with speckled trout swimming about in the tumbling waters. There were native rocks from the hills, and through the trees and shrubs were birds and game. Behind it all was the colorful panorama of the Ozarks.


The state of Arizona in 1934 used the natural sand back of their exhibit for a



Federal Building Surrounded by Court of States.

Entrance to Social Science Exhibits.





The sky-ride towers, 628 feet high and 1,850 feet apart, gave visitors a spectacular view of the fair. Cables at the 200 foot level carried passengers in rocket cars.

cactus garden, where cholla, sahuaro, pin-cushions and prickly pear felt at home in the summer sunshine. Here they stood until the last night of the Fair, when, "believe it or not", souvenir hunters uprooted them all and attempted to conceal them from the watchful guards at the gates.

Behind the sophisticated, ultra modern interior of the New York State exhibit, was a bit of Nature's handiwork, for here on the sands of Lake Michigan was recreated a typical portion of the Adirondack Mountains. It was done with rare charm and fidelity to nature and beauty. Seven carloads of soil, rocks, ledges, tree stumps, decaying leaf mold, moss, broken branches, native plants, and animals were brought to Chicago, and ingeniously fashioned into an age-old forest scene.

A woodland path wound through thickets of berried shrubs, white birches and ferns, then to a corduroy road, clinging to the side of a lake fringed with lilies and aquatic plants. A sheltered spring in the rocks became a rippling stream end, and as it passed under a rustic bridge, native fish could be seen and an occasional turtle or croaking frog. A climb over timeworn ledges brought the visitor to a slight promontory, where huge stumps, cordwood, and a dilapidated skidway indicated the site of a former lumber camp. The old trees had been cleared and the younger trees and seedlings had gained a foothold to build the forest of the future.

Florida's unique contribution was a 3-acre garden, located between the Lagoon and the Agriculture Building. A grove of orange trees, laden with fruit, was removed from the semi-tropical climate of the Everglades to thrive and bear in a northern climate. Months before, their roots had been carefully cut from the rich black muck in which they grew. When these delicate feeding systems had gradually healed over, each tree was carefully boxed and transferred to half shade for their long journey to Chicago.

In preparation for the hazardous trip, each orange was separately wrapped, the limbs securely anchored and the entire tree enclosed in cloth to eliminate loss of leaves or fruit. The patience and skill of those responsible were well repaid, for, not only did the trees flourish, but becoming somewhat mixed in their dates, and bewildered by the freakish changes in climate, they decided it must be blossoming time again. So, visitors saw trees bearing mature fruit, green oranges, and blossoms, all at the same time.

In addition, Florida presented a delightful garden and patio. Tropical and semi-tropical trees and vegetation, oranges, grapefruit, and other citrus trees waved their fronds. A miniature Everglades, planted with sugar cane in different stages of growth, rose about the huts with their thatched roofs. Rock pools, with colorful tropical fish, and fountains built of stone, brought in Spanish ships to the coast of Florida hundreds of years ago, delighted the visitors.

The Horticultural Gardens

Most extensive of all was the concession—Horticultural Gardens. Within the exhibit building was a series of magnificent "weatherscapes"—dioramas with

foregrounds to full scale, bathed in daylight from concealed skylights. There was a scene of the Italian Alps with mountain blooms carpeting the foreground in a profusion of brilliant colors. In the middle distance, an ancient stone bridge spanned a rocky stream, shaded by deep green firs. High on a rocky crag were the grim, gray walls of a feudal castle, its frowning battlements dwarfed by the purple peaks of the Alps.

The next diorama transported the visitor deep into the Florida Everglades. From the drooping branches of gnarled old cypress trees, gray Spanish moss hung in filmy streamers while tropical butterflies, bright green parakeets, slender black herons, and an alligator just emerging from the marshy foreground waters, added realism to the scene.

"A Study in White" represented a mountain woodland scene with dark rocks jutting out from glistening white snow. At one side was an old log cabin; an ice-bound brook circled the twisted roots of a tree and trickled down to a pool in the foreground.

Further along the broad corridors was a Colonial mansion, with spacious lawns, magnolias, and lilies of the valley; then a bit of the great southwest with interesting cactus and Joshua trees struggling in the desert. There was an Italian lake, rimmed by prim trees; a woodland scene from northern Michigan, with the pleasant odor of balsam wafting from the great trees; a doorway court garden; and a sixteenth century interior, with glimpses of an old-fashioned garden through the windows.

Outdoors, in a series of displays were five acres of the finest that floriculture and horticulture had to offer. Down the middle ran a formal Italian garden, flanked by rows of tall trees mirrored in five pools and set in a profusion of stately flowers and carved stone from Florence. "A Garden Rhapsody" offered a reflecting lily pond, fed by a small stream cascading from a rocky background, and a quaint summer house where the visitor could rest and enjoy its rustic charm. Nearby a rose garden of fifteen thousand bushes presented its 256 varieties of this lovely flower.

The characteristic gardens of many foreign lands were on view. A working Dutch windmill, rustic bridges, and an old-fashioned water mill hedged by an ancient split-rail "zig-zag" fence imparted authentic atmosphere.

The Park District of Oak Park, Illinois, presented a formal garden of outstanding beauty. A colorful flagged walk, pool and statuary were used to balance flowers and shrubs in attractive geometric groupings. The Palace Gardens of Versailles contributed an original statue of Diana as the central figure of another formal garden, built about the borders of a bright blue reflecting pool, which used replicas of broken Roman marble columns to suggest its Italian origin.

Mountains and a desert, painted on the wall of the north wing of the Floriculture Building, provided an appropriate setting for the California hacienda built in typical Spanish Mission style, with its garden of cacti. Here were flitting butterflies, songs of birds, and scents of a thousand flowers.

The Lagoon Problem

All early studies of landscaping had contemplated the unparalleled opportunity for the use of water. Three miles of Lake Michigan's shore and a lagoon a mile long conjured up many enticing picture studies. A magnificent bathing beach, early envisioned as an American Lido, proved unpopular, as Exposition visitors in their rush to see all in their limited stay had little time for beaches. The shore line, because of the bulkhead of enormous random stones necessary to protect it from the ravages of the waves, did not lend itself either to treatment or use.

A boardwalk entirely encircling the lagoon provided a cool place to rest and watch water sports. Sightseeing launches gave an unparalleled view of the illuminated buildings, and, especially at night, the gorgeous panorama was breathtaking in its beauty. But, architecturally, the lagoon was too wide, separating the Exposition into two parts, preventing the intimacy of large crowds, which is part and parcel of a fair; and making it difficult to get people on the island. At night the lagoon itself was a dismal and forbidding hole. This was the first year, and was not entirely unanticipated, for the Architectural Commission had repeatedly stressed the necessity of large structures in the lagoon. But the shortage of money and the great additional cost of building in the water precluded such work.

In the period between the 1933 and 1934 Fairs attention was focused on correcting this condition. The Grand Fountain was built in the North Lagoon, and the floating theater was greatly enlarged. Three exhibitors constructed substantial buildings—one on each side of the 16th Street bridge and one on the north side of the 23rd Street bridge. Exotic boats, underwater lights, and an augmented system of lighting along the boardwalk and on the bridges, a searchlight bank on the 12th Street bridge, and many modifications gave the 1934 Fair an aspect more nearly in line with early hopes.

Numerous studies and experiments were made to conceal the pile bulkhead around the lagoon. In turn came rapidly growing vines, and a cascade of water, the rising mist lighted from below; but the vines grew slowly and irregularly, and the fine nozzles of the cascade plugged with algae. The final solution, simple and effective, was a covering of large sheets of wallboard, painted to harmonize with the color scheme.

Landscaping Maintenance

The upkeep and maintenance of the landscaping during the operating period was performed by a staff averaging seventy-five men. The variance in subsoil conditions prevented a definite and regular watering and maintenance schedule and required that the soil of each tree and planting area be checked individually at weekly intervals.

The smoke and fume-laden atmosphere of a great manufacturing city plays havoc with all forms of vegetation by the deposit of soot on the leaf surfaces, retarding the proper functioning of the leaves, starving the plant and eventually causing death. These were counteracted by daily washing, with a strong water

spray, the foliage of all newly planted materials, particularly the evergreens which suffer more than deciduous trees. This kept the foliage clean and healthy, and it also aided in carrying the plantings through the extremely hot, dry months of June and July.

Because of these same conditions, the lawns required additional topdressing and feeding, besides the regular watering and general lawn care, to produce and maintain the desired green throughout the summer and fall. During the latter part of August and September, to rid the lawns of weeds—particularly crab grass which could not be removed by hand because of the cost—close mowing, raking and proper feeding was used.

The lawn watering was done by the night crew of eighteen men who worked from 11:00 p.m. to 7:30 a.m., the following morning, a schedule that made possible the use of lawn sprinklers without interfering with the visitors. The day crew worked from 6:00 a.m. to 2:30 p.m., spraying, watering, pruning, clipping, cultivating, weeding and mowing. The overhead washing and spraying of the foliage was done during the early morning hours before the gates opened.

The landscape maintenance organization was divided into three units with a foreman to oversee the work of each. Daily the head of the Landscape Section checked all areas, giving the necessary instructions as to the general maintenance and special treatment required. The lawn mowing was done by one crew which circulated throughout the grounds. Changes in landscape planting, due to building additions, were handled by an emergency crew.

The landscape work, from the end of 1933 to the close of the 1934 Exposition, was divided into three separate periods. The first covered the winter protection of all landscaped areas. The second included the preparation of plans and layouts for new landscaped areas and development of these new projects; the clearing and removal of 1933 landscaping from locations taken over by new exhibitors or concessionaires to make way for their own new construction; the removal of winter protection and maintenance of the previous year's plant material. The third period covered summer maintenance.

The flowers required for 1934 included geraniums, petunias, heliotrope, ageratum, periwinkle, salvia, cobeas, castor oil bean, verbena and marigold. A total of 300 new trees, 16,000 lineal feet of hedges, 7,400 shrubs, and 145,000 square feet of sod were planted during the spring of 1934.

Some new attractive outdoor features were added. The Ford Garden, covering three acres, with its Roads of the World and banked evergreens, flanked the lake shore across Leif Eriksen Drive from the Exhibit building. The maintenance of the landscaped areas during the 1934 Exposition was handled in practically the same way as in 1933.

DECORATIVE FEATURES

The style of the buildings and the general development of the grounds necessitated a new grammar of architectural expression for decorative features and those appurtenances which the public expects at an international exposition. While some were utilitarian in nature, most were designed to give a carnival atmosphere and to transport the visitor from his normal sphere to a world glamorous and scintillating with the gaiety of masquerade. To achieve this, there came a clamor for superlatives—the biggest, the first, the most. Exhibitors and concessionaires looked to the Exposition to provide such a setting, so the greater share of the burden was carried at Exposition expense, although much was provided under sponsorship of business concerns.

The criticism that the entrances lacked impressiveness was just, but other factors than lack of funds dictated the course pursued, particularly the geography of the site, bounded as it was by a high speed traffic artery and railroad tracks on the west, and large classical permanent buildings on the north. From a functional standpoint, the entrances served their purpose well, and in appearance were a satisfactory solution to a difficult problem. They were not subject to compromise, they had to be either simple or elaborate, to fit their surroundings.

In both exhibits and concessions, and as adjuncts to them, there were many features that were highly ornamental and spectacular, but those which are described in this chapter subordinated other purposes to the purely decorative.

Simple and effective was a group of six flags, twenty by thirty-eight feet, rising above a fountain and flower bed at the 12th Street gate. The United States Flag greeted the visitor, lovely by day and inspiring under floodlights at night.

The Avenue of Flags

Indelibly impressed upon the memory of all who attended the Fair is the Avenue of Flags. Banners as high as a five-story building lined both sides of Lief Eriksen Drive, from the Administration Building to the Hall of Science, nearly a third of a mile. The forty-seven poles, tilted at an angle of 60 degrees and supported by latticed steel columns, rose eighty-five feet in the air forming a canopy over the seventy-foot Drive. Breathtaking in their thrilling beauty, and filling the eye, their streaming furls took a commanding place in the decorative features of the Fair. In 1933 the flags, all alike, were a brilliant red with a narrow stripe of yellow. In 1934 they were a soft turquoise blue.

At first designed to hang stiff and formal, samples were made of heavy canvas. But even with a gentle wind, they were torn to shreds while being hung. When a change was made to bunting, guy ropes were tried to hold them in place, but the force of the wind on so vast an area made this not feasible and they were permitted to fly freely to the breeze. In spite of watchful care, their life was but a few months. It was exciting to see an emergency crew endeavoring to furl them before the arrival of a predicted storm. A little ineptitude and a gust of wind, billowing in the folds, would send struggling men sprawling across the Drive.

In the court on the lake side of the Communications Building rose four great pylons, their form reminiscent of the cypress trees at the crossroads of the famed Villa d'Este Gardens in Rome. At their center was a pool beneath whose waters lay a blue-tiled bas-relief of the world, with racing spirits weaving about it a net of wires and radio waves to provide communication for mankind. The "trees" were 100-foot steel towers, covered with wire lath and rough plaster, suggesting leaves.

As one stood between the towering green forms and looked out toward the blue sky over the lake in early evening, the sky was no longer blue, but a gorgeous purple-violet. Curious and unique, it was the optical effect caused by flooding the eye with the reflected light from the green towers while at the same time gazing at the blue sky. The combination on the retina caused the brain to perceive a color that defied nature.

The wind, no matter from what direction, was caught in the interior flute of one pylon or the other, swirling a cool breeze about the pool on even the hottest days. No doubt many a foot-weary Ulysses on his Odyssey through the Fair sank with a sight of contentment on a bench by the quiet pool, and imagined himself in the cool cave home of Aeolus.

The Lofty Thermometer

From an architectural standpoint a dominant was required near 23rd Street, and this need was fulfilled by a thermometer, sponsored by the Havoline Company. This graceful shaft, towering 240 feet, was triangular in form and on each face appeared the graduations of a thermometer, with the temperature indicated by a column of neon tubes. A delicately adjusted master thermometer in the base

operated a series of relays, which lighted or extinguished a three-foot, six-inch section for each two degrees of change. Simulating mercury, the column of light was continuous from the base and burned both day and night.

To turn the necessity for seats and shade into a decorative opportunity, giant umbrellas with gay colored covers were spotted about the grounds. A pipe ring suspended from a center column and securely guyed, formed the frame upon which the canvas top was stretched. In attractive settings and large enough to accommodate eight benches, they proved popular and serviceable.

Opposite the General Exhibits Group was the Cactus Pergola. A flat roof in the form of a segment of a circle was supported high in the air by slender, round columns. It sheltered concrete benches and a small fountain, made of rain spouting, and suggestive of a clump of cacti.

Flags by the hundreds, in many sizes, shapes and colors, carried a gay note in the lake breezes. Practically every building had its quota, and free-standing poles were erected in strategic locations. Intensive study was given to selecting flags of correct size and color to harmonize with their surroundings. Supplies of the flags of all nations and states were maintained, and under the rules of diplomatic etiquette they were properly flown on appropriate occasions. Few things can contribute more to an unkept and slovenly appearance than bedraggled and soiled flags. Care and maintenance created a constant problem. A shop, under an experienced navy flagmaker, and a special crew, were necessary for their upkeep. The cost of flags is insignificant compared to the beauty and appeal of their massed effect.

The magnificence of the Court of Honor at the Columbian Exposition of 1893 was largely attributable to the lavish use of sculptured forms. Not without reluctance, it was admitted that both the cost and the style of architecture would preclude such extensive use of sculpture at A Century of Progress. It was probably also a feeling that a 1933 World's Fair demanded a modern expression of all forms of art, rather than its architectural need, that prompted a limited representation.

It has been said that the meaning or symbolism of sculpture is frequently applied after completion by the sculptor's friends or enemies. However, so dramatic and forceful were some of the panels on the exteriors of buildings that the eye was likely to catch the action, follow the sweeping line or come to rest on some detail, and be unaware of the fundamental idea.

The Architectural Commission, on January 30, 1931, suggested Lee Lawrie as consultant on sculpture. He modeled some of the sculpture himself and cooperated with the Works Department in selecting other sculptors, and in developing the suggestions for the subject matter and a treatment which would be in harmony with the architecture.

The sculpturing on the Administration Building was the work of Alvin Meyer. It comprised two slender figures, one connoting Science, by the zodiac characters arranged in a semi-circle at the base, and the other, Industry, by gears and machinery wheels. They were bas-reliefs, in plaster, affixed to the walls on opposite

sides of the front entrance.

The Hall of Science represented some variety in sculpture. The Fountain of Science in the open-air court at the north, was the work of Louise Lentz Woodruff and had for its theme—"Science Advancing Mankind". It was illustrated by a great robot-like figure, typifying the exactitude, force and onward movement of science, with its hands at the backs of the figures of a man and a woman, urging them on to the fuller life. Below the large elevated pool, from which the central group rose, were eight lower pools, each dedicated to one of the basic sciences, and decorated in relief.

On the building's north elevation, between the huge pylons, were four sculptured panels by John H. Storrs, symbolizing Physics, by a half-kneeling, female figure holding a plumb-bob; Mechanical Science, by a male figure, seated, hands resting on a wheel; Chemistry, a female figure, holding in the palm of one hand a glass flask; and Natural Science, a female figure, half-kneeling, grasping a growing plant. Nearby, a free-standing male figure, Knowledge, was depicted in combat with the serpent, Ignorance, entwined about his legs and impeding his progress.

Electrical Building's Sculpture

Across the Lagoon in the circular court of the Electrical Building were the most spectacular and elaborate examples of modern sculpture. Two plaques, 40 feet high, flanked the cascade. On the left was the heroic figure of a woman flashing through boundless space and symbolizing Stellar Energy—"Light is the beginning of all things. From the utmost ether it issues, shaping the stars, answering in its patterns to the majesty of creative thought." On the right was the companion figure of a man, representing the dynamic forces of Atomic Energy—"Energy is the substance of all things. The cycles of the atoms, the play of the elements, are its forms, cast as by a mighty hand to become the world's foundations."

Twin, free standing pylons, rising one hundred feet, and guarding the water gate, were decorated by bas-reliefs, entitled "Light and Sound," the creation of Lee Lawrie. They showed how man's two main receptive senses, Sight and Hearing, have received vast extensions through the power of electrical instruments. At the base of the north pylon was a glaring sphinx, symbol of the unknowable, over which was a serpent (here representing Wisdom, instead of Ignorance) and the sun, moon, and invented light. Above these were bands of ornament, symbols of earth and water, with a genie descending with light. Over the listening sphinx of the south pylon were three grotesques of Sound—thunder, music, and telephonic sound, and above bands of air waves was a genie descending, calling. The designs were modern, but had an obvious Aztec leaning.

Above the entrance of the Communications Building was a group designed by Gaston Lachaise, entitled "The Conquest of Time and Space." The central figure was the Genius of Electrical Communication, rising from a dynamo, its outstretched arms encompassing the world of radio, telephone, and telegraph. Below,

a mass of humanity marched towards the symbols of the positive and negative electrical poles. On the left was a symbolic figure of Electrical Science—on the right a figure of the Dark Ages, veiled, rising from a stratum of prehistoric life, the pyramids of Egypt and a temple of classic Greece.

The facade of the Radio Building conveyed a broad representation of modern radio, with electromagnetic waves, mechanical apparatus, and man's uses thereof interwoven into the design. The dissemination of music was shown in the central panel, classical rendition represented by violinists and an opera singer with harp and organ pipe motifs, and popular music by a Negro jazz orchestra. Other panels presented announcers, suggesting the broadcast of news and lectures; a man in distress sending the tragic call of "SOS;" a man bringing himself in contact with his family and work through the medium of television; and a scientist in his laboratory, with an X-ray tube, and skeletons of a human and a cat, suggesting the X-ray's significance in research and medicine. This sculpture was done by Alfonso Ianelli.

Leo Friedlander executed a series of four figures on pylons towering above the north entrance of the Hall of Social Science. The figures were allegorical, deriving their inspiration from Indian and Hindu mythology. The east pylon depicted the God of Fire, represented by a two-headed youth with a goat to his right; next was a male figure with chariot, the God of Light; then a female figure, the Goddess of Night or Darkness, and above her head symbols of the solar system and stars; last, a youth with an elephant spouting water, and clouds above, representing the God of Storm.

The United States Government building was decorated by sculptured figures, symbolizing the three branches of the Federal Government. The Judicial was done by Lorado Taft; the Legislative by John H. Storrs; and the Executive by Raoul Josset. Bronze replicas of the insignia of the United States Government were also sculptured by Mr. Josset.

Above the entrance to each state exhibit of the States Building was placed a large reproduction of the official seal of that commonwealth, as a decorative feature. These gilded plaster seals were also the work of Raoul Josset. Twenty-two of these seals, supplemented by the official seal of the Exposition over Exposition offices, were a part of the 1933 decoration. Additional seals were sculptured and cast for the new states and territories participating in 1934.

Three plaster figures by Raoul Josset, depicting Agriculture, formed a part of the exterior decoration on the Foods and Agriculture Building. Several exhibitors presented notable examples of contemporaneous sculpture. Noteworthy among these was the work of Carl Millis, in the court of the Swedish Pavilion.

The potentialities of water conjured alluring visions, but the practical difficulties in its use precluded many attractive features which had received serious study. There was the projected Tower of Light and Water, abandoned because of its cost and technical uncertainties. The molds of an elaborate fountain were presented to the Exposition and shipped to Chicago, but its classical beauty was to remain unseen upon the grounds, as no place could be found where it would

not appear incongruous in contrast with the architectural style of the neighboring structures.

Fountains and Cascades

Water found its place in literally scores of places throughout the grounds and in many interesting forms and phases. In the ring formed by the 23rd Street bridge, three fountains were constructed a hundred feet off shore. The water effects of all three were identical and changed in synchronism by means of a thruster valve actuated by a central controller. They recirculated water from the lagoon, 3600 gallons a minute, in a variety of forms from the finest mist to heavy columns of water, with a towering central plume.

Through a cycle of ten-minute duration, the center fountain evolved gradual changes of red, green, blue and amber light, the 70 incandescent projectors, submerged under the water of an upper pool, and controlled by a thyatron reactor system. The two flanking fountains used only clear light.

The center of the Electrical Court was graced by an ingenious fountain, suggestive of a huge morning glory. At the center of the pool was a stepped basin, with vertical streams emanating from annular rings of jets at each of the four levels. Each band was illuminated a different color by static light, red at the bottom, yellow next, then green and blue at the top. Perched seventy feet above the pool and supported on structural steel legs, was a 32-foot cone-shaped canopy of chromium-plated, hand-hammered copper. Its specular surface reflected downward a myriad of tiny flashes of mobile color, which combined to give a glow of synthetic white over the court. Jets of water intercept less than ten percent of the light and the remainder would have been lost were it not for the canopy which reflected a large amount of the light from the 135 submerged floodlights back to the ground. Particularly from the lagoon launches was this fountain a spectacle of superb beauty.

The Firestone Garden presented a notable creation. From a long pool there rose a series of dome-shaped fountains of mist-like spray with a high center jet. The water play and the variations of color emanating from a battery of submerged lights were synchronized with music, the fountain reflecting the mode or tempo of the notes, and so it became known as the "Singing Fountain." The inspiration for this beautiful feature came from the temple fountain in the Alcazar Gardens, Sevilla, Spain.

Striking and effective were the pools of the National Terrazzo Association, which remained after the close of the Exposition, making a permanent approach to the Planatarium. Six hundred feet long, it is composed of a series of twelve graduated basins, the shallow water in each spilling over into the one next below. The geometric design, by John Norton, on the floor of each pool, symbolized one of the twelve months, and well illustrated the possibilities of terrazzo to use gay colors or subdued effects. Bordering the pools are wide terrazzo esplanades. Differing from mosaic where stone is laid in patterns, terrazzo traces the design with brass stripes on edge, between which are placed colored marble chips and other

pigmenting material, mixed with cement. On drying, the surface is ground smooth and polished to bring out the colors.

Among the fountains of more standardized design were those in the gardens of the Chrysler, Horticulture, American Radiator, and Good Housekeeping Magazine exhibits, where they were major decorative features.

All fountains on the grounds recirculated the water, either from the lagoons or their own pools. A notable advance was made in the economy of submerged light fixtures, not only in waterproofing, but in permitting the water to flood the reflectors. This kept the globe cool and gave mechanical strength to the colored lenses to resist the crushing force of the water falling upon them. While prompted by economy, it was found that for temporary use, ordinary pipe slightly flattened at the end gave quite as satisfactory results in most cases as carefully designed nozzles.

Signs Raise Hard Problems

Through the pre-Fair and operating period, signs continuously presented problems difficult of satisfactory solution. While of themselves not considered decorative features, lack of a strong control over their use could readily have destroyed beautiful effects otherwise achieved. Every exhibitor and concessionaire had a right to expect adequate facilities for advertising his goods or entertainment, and the large majority willingly acquiesced to the rules and regulations realizing they were designed for their own protection. But it was the vociferous minority that demanded signs of exaggerated size and glaring brilliance, that they might attract disproportionate attention to themselves and away from their neighbors and competitors.

The rules adopted were specific and fair and designed to preserve the dignity and beauty of the grounds and to assure uniformity of treatment to all. The regulations governing exterior signs provided that they be a minimum distance above the ground or terrace; that the vertical height be limited, dependent on their elevation; and that they be substantial in construction. It also was provided that there should be no exposed source of light, except for gaseous tubes at the south end of the grounds, but that the illumination should be indirect, or so contrived as properly to diffuse the light by opal glass. While flashing was not permitted, signs which utilized dimming and color changes were attractive and interest-compelling, notably those on the Firestone building. Wording was carefully censored for accuracy, and could apply only to the exhibitors' own products. Before erection, all signs had to be approved by the Exposition.

A new technique in signs was developed, which has been followed elsewhere, for it was demonstrated that signs could be made beautiful without losing high attention value. It was the belief of the Exposition that signs which are offensive or simply ugly, do not contribute to the box office, and may do actual harm.

Through the period when funds for necessary construction were so limited, suggestions were made that the Exposition follow the precedent of previous fairs and sell space for commercial advertising about the grounds. Great electric signs

on the towers of the Skyride, posters on the main fence and sides of buildings were among the proposals. That there would have been a large and immediate income from this source did not deter the Exposition from its firm determination that visitors should not be greeted by selling arguments at every turn, and that what beauty had been attained should not be marred.

With the Exposition foregoing this opportunity for revenue, its hands were strengthened in dealing resolutely with violations of the rules. For with repeated slight encroachments, it would have been easy for signs to get out of all control, with resultant chaotic conditions. In spite of the added expense all would have felt it mandatory to keep abreast of their neighbors. Typical of the difficulties was the offer of a great corporation to install a number of drinking fountains. As the visitor would lean over the jet, his head would intercept a beam of light on a photoelectric cell, which would cause a graphophone record to whisper softly in his ear an enticing selling message.

While the fountains were attractive in design, and while the novelty of the device would have assuredly intrigued the visitors, they were reluctantly disapproved, partly because the advertiser was not an exhibitor, but principally because it would have brought an irresistible demand for other forms of detached advertising devices all over the ground—the time to stop was at the beginning.

ILLUMINATION'S DRAMATIC ROLE

From the spectacular gas flame that illuminated the Paris exposition of 1851, to the beauty and grandeur of the electrical jewelry still remembered as the outstanding feature of the San Francisco Fair of 1915, each succeeding world's fair has blazoned notable advances in the art of illumination.

The Crystal Palace in London in 1882 had used incandescent lights for the first time. Chicago's Columbian Exposition startled the world with the white brilliance of its electrical display, for which it used more current than the entire City of Chicago did at that time.

With the advance made by science in the intervening years and the opening of the new field of thermionics, it was anticipated that A Century of Progress would outshine its predecessors in the novelty and magnificence of its night display. With such a goal, studies were begun even before the first buildings were started.

If color by day was to be the common denominator of structures differing vastly in character, so light by night should perform the same function. The polychrome festival of the day should be transformed into an even more dazzling spectacle by night.

In the illumination of an exposition the utilitarian features, and even the efficiency of luminaires are secondary to the aesthetic and psychological effect. Its function is to vitalize buildings and landscaping and blend the whole into a gorgeous color symphony, to present to awe-struck and foot-sore crowds a satisfying glory of joyous light.

Strung along three miles of lake front and subject to atmospheric conditions, frequently fog-like in their density, a lighting effect which was to hold A Century

of Progress together presented baffling questions. Water effects must be studied, and the opportunity of the lagoons for reflections; the shrubbery and arboreal features must not be slighted; the play of great lights in the air must receive its place.

The problem was threefold: first, the installation of feeder cables of sufficient capacity and with convenient outlets; second, the placing of fixtures of proper intensity and characteristics for the flood lighting of buildings and general illumination of the grounds; and third, the contriving of spectacular features of poetic beauty and emotional appeal.

The charge of illuminating engineers that architects were prone to design a structure and call in the lighting men after the building was finished seemed well founded. In the interest of both economy and efficiency it was determined that the work of the two groups should go hand in hand and that their close cooperation would assure a structural design that would provide for the lighting effects.

However, as with many other carefully laid plans, eventualities did not permit its full realization. Some of the early lighting devices, so intriguing in the laboratory, and for which provision was made in building design, did not prove practical for use on a large scale. The uncertainty of funds prevented commitments for lighting effects sufficiently in advance to give the architects complete information for their studies, yet construction could not wait for final illumination plans. However, all buildings incorporated considerable illumination in their original design, and this was augmented when the general scheme was put into effect, just before the Fair opened.

In July of 1930 E. W. Lloyd was asked by the Exposition to organize an Advisory Committee on Illumination. He assembled a distinguished group of illuminating engineers, secured the use of the well equipped Chicago Laboratory of the Commonwealth Edison Company, and delegated E. D. Tillson to act as resident member of the Committee on the staff.

Scope of Committee Study

To show the scope of the study given by this Committee, the agenda for their meeting of December 30, 1930 is reproduced:

(a) Submarine lighting patterns, geysers, fountains, cascades, and cold vapor effects.

(b) Mobile color patterns such as produced by scintillators, gyration of light sources and lenses, "Liqui-Lite", color organs, Colorama, Clavilux, Lumitone, Scene-in-Action, etc.

(c) Fluorescent and phosphorescent effects. Use of luminescent paints for interior surfacing, creation of changing and disappearing patterns, luminescent cascades, fountains, etc.

(d) Immobile floodlighting, color-shadow illumination, multi-plane lighting, fixed color patterns by projection, silhouette lighting, etc.

(e) Gaseous conductor lighting for interior and exterior use. Indirect silhouette cove and niche lighting by means of neon tubes. Use of neon with panels of

etched glass by the "Viking" principle. Traveling and stroboscopic effects, etc.

(f) Utilitarian lighting of exhibition halls—use of special skeleton equipment for this purpose. Emergency and exit lighting. Stairway and ramp lighting.

(g) Lighting of exhibits. Stage effects for exhibits. Diorama lighting. Dimming. Cycloramas.

(h) Motor highway, footway, and plaza lighting—types to be considered—desirable intensities—combination systems. Directional lighting. Safety and traffic control systems.

(i) Synchronous control of lighting effects throughout certain areas or within certain buildings—Thyratron, pneumatic, hydraulic, and other parallel systems of control.

A laboratory was set up in the basement of the Administration Building, where various suggestions could be tested and demonstrated. It served to focus attention on difficulties and to warn of what not to do. There were ingenious devices which produced thrilling effects in darkness, but one 40-watt lamp would ruin them and hence, because there would be "spilled" light from many sources during operation, they were eliminated.

There were fluorescent paints that blazed in colored brilliance under the unseen rays of ultra violet lights. Reflections from ripples in a pan of water caused tongues of flame to play on walls. Tiny mirrors oscillated by the breeze of an electric fan gave translucent windows a mysterious opalescence. "Color shadows" from gaseous tubes painted rainbows on the ceilings. Man-made lightning from a "ladder-arc" roared and snapped between vertical electrodes thirty feet long, and changed color in chemical vapors.

Intriguing as they were in the laboratory, they were not practical for use in the Fair. It became evident that with the grand scale of an exposition, detail lighting or small special effects would be lost, and, therefore, available funds must be concentrated on the illumination of masses and on spectacular effects of great size.

In these early days of the Fair there was little of interest to show distinguished visitors or prospective exhibitors, yet they all expressed an interest in seeing something tangible of the plans. The lighting laboratory admirably filled this need for here were dozens of dazzling and beautiful effects of the wizardry of light. No one went away without feeling that he had caught a glimpse of the progress of a century, and a sample of the wonders to be seen at the Exposition three years hence.

By the fall of 1932 considerable illumination had been installed, though connecting elements were lacking. General policies had crystallized and there had been gathered many ideas and a wealth of data on the specific problems. Some things that were done were far from satisfactory to that ultimate test—the human eye. The doorway of the Administration Building had been the first endeavor and with much dismay it was admitted that it gave a splendid representation of a row of milk bottles. Screens of spotted color turned them to weird hobgoblins at close range and killed all effect at a distance. Each installation had shown that

there was still much to learn, for its great scale and diverse conditions make of each exposition a subject for original research and individual solution.

Getting The Job Done

Through the earnest work of staff members and the able assistance of eminent illuminating engineers, who gave unstintingly of their time and thought, the problems had narrowed down to the practical one of getting the job done. The physical layout was set, for most structures were then nearing completion; the color scheme had been determined and the successes and failures of the early attempts had clearly indicated the broad course.

The opening was but six months off—all too short a time for the tremendous amount of work still to be done. And funds to complete projects already off the drafting board were not in sight, much less for those necessary to key the whole composition to the high note that an exposition demands.

The solution came in a joint agreement reached at this time with the General Electric Co. and the Westinghouse Electric & Manufacturing Co., whereby they agreed to furnish materials, engineers and the use of their laboratories for the remainder of the lighting plans, and accept gold notes in full payment. The \$350,000 assigned for this purpose was in addition to that of other agreements where gold notes had been accepted for such utilities as transformers and incandescent lamps.

The services of the late W. D'Arcy Ryan, who had been the Director of the General Electric Company's illuminating engineering laboratories, were offered to the Exposition and he was made Chief of Illumination, with Charles Stahl, of the Westinghouse Co. as his chief assistant.

The successful and harmonious execution of this contract was largely due to the willingness of the representatives of the two companies to concentrate on making the teamwork effective in producing a creditable result. In close cooperation with staff members they worked feverishly to be ready on time. They succeeded, but it must be admitted that many a switch was thrown for the first time on opening night.

When the vivid colors of the Urban palette were approved in January of 1933, a new element was introduced which caused many apparently feasible lighting effects to be thrown into the discard. In former expositions the white or soft-colored surfaces could be changed by the illuminating engineer to colors to suit his will, but with the strong colors of *A Century of Progress* light could only emphasize them, or modify their hues. The application of mobile color where the dimming and changing of multi-colored lights would produce an opalescent intermingling and kaleidoscopic movement, successful in other expositions, was abandoned on the advent of strong colors. The final scheme would be static and use only clear light to flood the building facades. Color lenses and screens would provide depth and atmosphere.

One of the earliest considerations had been to prevent disagreeable intensities or exposed light sources, because it had been realized that a single bright light in

the foreground would kill the effect of an effectively lighted building behind it. This was accomplished by indirect lighting and by translucent shades. Incandescent lamps of low wattage and blue gaseous tubes were the only exposed lights except where the distance from which they could be viewed was sufficient to subdue more brilliant sources.

The designed intensity of light varied in different locations from one "foot-candle" on the facade of an inner court, to fifteen "foot-candles" on prominent architectural features. But the amount of light which the eye sees on a floodlighted surface is as much dependent on the coefficient of reflection of the color or character of surface as it is on intensity of source. And this varied from five percent for the dark blue to seventy-five percent for the white, and averaged only thirty percent for the entire exposition. That is, seventy percent of the light would be absorbed and lost.

Except for the more lavish use of lamps of high wattage, the floodlight and the searchlight, which formed so important a part of the night illumination, were essentially the same as had been used at San Francisco in 1915. But there were many new effects which the visitor was to see for the first time at A Century of Progress. Development does not divide itself into neatly separated one-hundred year blocks, but, despite the dates of expositions, is a continuing process. So it was snatched on the fly, and used in an embryonic state or along the path toward maturity. Noteworthy among these scraps of development was the gaseous tube, more popularly known as the neon tube.

The Gaseous Tube

This had found considerable use in signs where short lengths delivered their stroboscopic glare direct to the eyes. A new technique in its application was developed for the Exposition soon after 1929, where its architectural possibilities were demonstrated. Its long shadowless lines of light and its atmosphere of color gave a fairy glow to gay surfaces. For both exteriors and interiors a variety of uses produced enchanting effects.

The so-called "neon" light is a glass tube of carefully figured dimensions with metal electrodes enclosed at the ends. When the air has been exhausted, a tiny amount of one of the so-called "rare gases" is admitted to the tube and sealed in. As the high voltage from a small transformer is applied to the ends, electrons break away from the atoms in the electrode and, traveling at terrific speed, crash into the atoms of the gas within the tube. The result of the collision is to dislodge other electrons from those atoms which, as they fly off, knock loose still more electrons. The flying electrons are continually finding new homes with atoms that have been deprived of their quota. As long as the current is on, new disruptions and collisions are continually taking place and, as each occurs, light flares up.

As a result of this electronic bombardment neon gas emits an orange red light. Blue light is obtained by using argon together with a mixture of krypton, helium and mercury vapor. The same mixture in a tube of yellow glass gives green.

Helium produces a pinkish white light in a clear tube, and with yellow glass, a rich gold.

The first use at the Exposition of gaseous tubing on a large scale was on the tower of the Hall of Science, where nearly a mile of it, blue on the north and west faces and red on the south and east, gave a warm glow that could be seen for miles. With tubes concealed behind channels the results were purely those of reflected light.

Outstanding among all effects was its use to simulate a cascade in the great court of the Electrical Building. This section of the building was designed to represent a great dam, and for the spillway there was a tumbling waterfall of 4600 feet of tubes emitting a soft blue light that seemed to diffuse itself through the atmosphere like fine mist.

From their first studies in 1929, the Exposition engineers were convinced that in the field of gaseous tube lighting lay possibilities for unappreciated opportunities, and the Federal Electric Co. was asked to undertake their exploration. They made a special research appropriation and their R. E. Barclay devoted practically his entire attention and effort to it for several years.

The extended shape of the ground required some method of unification or tying together, and this was accomplished effectively by a bank of searchlights at the south end of the grounds. The 24 lights, mounted on a two-step platform, spread an aurora of colored light over a large part of the Exposition. Each light delivered sixty million beam-candlepower. Manned by a crew of trained operators, the beams could revolve singly or together, could be focused down or expanded and, with screens of many colors, could produce moving patterns in the sky both weird and beautiful. And then at command they could be stopped to spread a silver fan over the grounds.

A striking effect, which was used but a few times, because of the expense and a location which permitted only a poor view, was produced by steam jets in the form of plumes, fans and pinwheels on which the searchlights played. Had a better location been available, it is probable it would have been used more. The smoke from aerial bombs was also used as a medium on which to play the varicolored beams.

Two other banks of searchlights were employed in 1933. The tops of the Skyride towers were used to mount 25, 24-inch searchlights to flood nearby buildings and produce naturalistic shadows. In the Electrical Building court there were focused 17 searchlights, so that their beams converged directly over the fountain. Their 21 million candle power represented the largest battery of incandescent searchlights used up to that time.

In all some fifty different forms of lighting standards and pylons were used throughout the grounds. In most cases no attempt was made to disguise either the luminaires or their structures, but they were treated in the same functional style as the buildings. In many instances, the fixtures were an integral part of the architectural design of either the area or building they served.

Floodlights Raise Problem

The difficulty of placing floodlights for building facades was accentuated by the "set-backs" in the building, the roofs of which offered delightful spots for visitors. The balconies, terraces and the connecting bridges were an essential part of the architectural plan as they afforded broad vistas over the grounds and facilitated circulation on upper floors. But in these localities, to place floodlights in such normal locations as beds of shrubbery, would have meant that the observers would look directly down into the glare of the light sources.

A group of unique lighting standards was designed to overcome this obstacle. Latticed steel poles were surmounted by banks of 18 floodlights which could be individually directed to light evenly a surface. A simple canvas backing, painted the color of the building they faced, concealed the reflectors.

The purely functional "street lighting", whether on the main thoroughfare, on bridges or on the many paths which wound through the grounds, met definite requirements. The source of light must be either concealed or so subdued as not to interfere with the decorative illumination. The standards and fixtures must be unique and interesting in design, without the over-decoration that would be inconsistent with the general architectural style. They must be economical in construction.

The Avenue of Flags was made brilliant with long tubular frosted Mazda lamps mounted horizontally between reflecting discs. Ball shaped luminaires surrounded by the signs of the Zodiac were appropriately placed on Planetarium Avenue. Particularly effective were the "Weeping Willow" lights in the Court of States where hundreds of tiny, flame-tinted, lamps were formed like the branches of a tree. Besides being decorative they performed the useful purpose of illuminating the facade of the States Building, which had presented a difficult problem because of the second floor terrace, generally crowded with people to see the night events in the court.

None attracted more attention than the "mushroom" lights, which were so successful that the number was increased to cover many landscaped areas in addition to their original purpose of path lighting. Their soft colors and circles of light on the ground, which appeared as mounds, dotted many areas, and produced charming and surprising effects. Cones of colored, translucent Micarta were supported on low shafts of finned aluminum. The reflected rays of the single incandescent lamp caused a glow to emanate from the ground, and the visitor seemed to be walking waist deep in a pool of light, with only the soft color of the shade above.

Of interest, because it so well illustrates a problem met with many times during the construction period was the "chromoscope". Through the alternate louvers of this tall pylon, red and blue green lights constantly mingled and changed. To accomplish this, the interior offered a marvel of electrical magic, baffling in its complexity. Hot-cathode mercury and neon gaseous tubes were dimmed and controlled by thyatron tubes, an ingenious hook-up of induction ballasts, reactors, condensers and a motor-driven timer. Costing many thousands of dollars, it rep-

resented the last word in electrical development. But most of this was concealed from the casual visitor and the effect which he saw could have been produced by more conventional means for a fraction of the cost. It typified the humorous expression, "Technique is doing the simplest thing with the greatest difficulty."

The Exposition was fully conscious that the 1933 lighting scheme left much to be desired. The number, size and location of even major structures could not be finally determined until a few months before the opening, leaving all too short a time to prepare the illuminating effects properly. But, behind it all, was that most difficult and baffling question—where is the economic point beyond which an additional expenditure would not produce commensurate returns towards meeting the primary obligation of paying debts?

Common to all decorative effects was the query—will this particular feature cause an increase in gate receipts sufficient to justify its expense? Obviously, it had to be balanced with many factors, and there could be no "control" which would demonstrate the wisdom of the ultimate decision.

Study 1934 Lighting Effects

The experience of the first year's operation made clearer the solution for 1934. Study was given over the winter months to the elimination of dark areas, especially those where it was desired to induce crowds to move at night, such as the Island Midway. It was felt that the general light level should be raised, and that additional spectacular effects were needed to impart a sense of newness to the second edition. Such technical problems as the better concealment of light sources, rearrangement of floodlights to give more uniform illumination and the more effective use of color screens to intensify colors received full consideration.

Particularly worthy of note is the fact that the greatly improved scheme was accomplished with a disproportionately small outlay of funds. In fact, throughout the Exposition, whether in exhibits or in outdoor displays, it had been demonstrated that cost is a poor criterion of effectiveness. A lavish expenditure of money would not compensate, in crowd-gathering interest, for lack of ingenuity or imagination. Thousands would be spent on one exhibit that was ignored by the visitors, while an adjacent one, costing a few hundred, would have a continually waiting queue. This phase is more fully discussed in the section on Exhibits but, the application being general, an especially significant example is given here.

The Skyride, as an opportunity for a night display, had not been utilized because of the excessive cost of the means suggested. In 1934, a series of 25-watt incandescent bulbs were strung on 20-ft. centers on the cables connecting the towers. Like stars they twinkled above the crowds, attracting the attention and comment of nearly every visitor to the grounds. But significant is the fact that they cost but a small fraction of other devices, whose existence but few realized. With the addition of bands of neon tubes around the observation platforms and green floodlights on the top, the Skyride emerged from its nocturnal obscurity of the year before to become the dominant feature of the night display.

In 1933, the lagoons at night had been somber and unattractive, their width

being so great that the lights on the sides did not carry across. So, for 1934, it was determined to carry out an early suggestion of John Holabird and construct a fountain in the north lagoon on such an elaborate scale as to focus attention on this end of the grounds.

The Great Fountain

As constructed, the fountain was composed of a stem projecting southward from the Planetarium bridge, a great dome and three detached fountains. The stem was 540 feet long and produced by a double row of jets arched toward the dome. More than 200 floodlights, submerged below the surface of the lagoon, bathed the spray in clear white light. The dome, 150 feet in diameter, was formed by concentric rings of nozzles projecting toward the center, giving what was apparently a solid mass of water 40 feet high. Paralleling the rings were troughs for floodlights, so controlled as to give a changing color glow through the ambers, reds and blues, and then pure white. With the red lights alone, there was produced the effect of a great steaming caldron, with lengthening tongues of flame leaping up its sides. Gradually this would subside to become a block of jade, and then barely visible under a soft deep purple. The mist rising hundreds of feet into the air and drifting with the lake winds would be caught in the beams of multicolor searchlights, producing a never-to-be-forgotten effect.

Ten giant pumps recirculated the water from the lagoon at the rate of sixty-eight thousand gallons a minute. The world's next largest fountain only used fourteen thousand gallons a minute. Nearly a million watts of electrical energy were used in its illumination. There was water and current enough to supply a large modern city.

To balance the searchlight bank at the south of the grounds a new bank of sixteen high-intensity arc searchlights mounted on the 12th Street bridge formed a gay aurora over the north lagoon and the Grand Fountain.

The new exhibit buildings added materially to the night effects, notably the Ford Building with its mobile color on the three set-backs of the rotunda. In seemingly endless combinations, the reds, blues and greens would merge imperceptibly, one with the other. While the colors were apparently of the same intensity, it is interesting to note that they were in the proportion of 100 red, 150 green and 200 blue. Exposed gaseous tubes were installed on the dome and fin of the "Doodle-bug"; on the pylons and south wall of the Armour Building; and on the fins of the Lagoon Theatre.

The 1933 fixtures for the general illumination of the grounds remained substantially unchanged, but several new types were designed and installed for 1934, such as the "Discs" on the Beach Midway, the "Lily of the Valley" fixtures of the Midway approach, and several of fantastic shape at the south end of the Island. Many odds and ends of electrical equipment had accumulated in the store houses and these were fashioned into ingenious fixtures, almost without cost to the Exposition. Some of these were quite as attractive and more practical than those which had been specially built from elaborately prepared designs.

That so much was accomplished under such trying circumstances speaks volumes for the patience and ingenuity of those who made the final result possible. Among these, it was J. L. McConnell whose tireless work translated into final action the various and sometimes conflicting factors.

A notable step forward was made in making light an integral part of architecture and not merely an adjunct to be applied to a finished product. It is certain that better than ever before, were the potentialities of light grasped by the architects to beautify building form, and by business men better to display their wares. Every known form of lighting found its niche somewhere upon the grounds.

Chapter 11

INTERIORS

An exposition is divided naturally into exteriors and interiors—broad vistas and towering masses; close relationships and intimate detail. The problems involved in each are quite different, yet there must be a relationship and a transition. Although interiors exist solely for the display of exhibits, yet in their design and construction the architect and the exhibitor are inseparably connected. With enclosing walls designed around probable exhibit needs, the arrangement of the interior became a study of how best to set off the displays and how to alleviate the inevitable fatigue of the visitor.

Frequent lounges were an obvious contribution to the comfort of the visitor, but the more subtle means, such as the texture of floor surfaces, restful colors, proper illumination, the arrangements of aisles, the sequence and orderliness of exhibits, convenient rest rooms, and a host of others, did much toward permitting the visitor to absorb what the exhibits had to offer. There was so much to see, so much to take-in, that the mental exertion contributed largely to the physical strain.

This was never better expressed than by a Negro nurse brought up from Tennessee to help care for the children on their tour through the Fair. On reaching the hotel that night, she dropped into a chair thoroughly exhausted. "Are you tired, Mary?" asked her employer. "Lawdy, no, but my eyes done wore out."

Break with Precedent

A Century of Progress broke wide from precedent in presenting interiors

of beauty and finish. Previous fairs had generally left structural members exposed, or made attempts at decoration with bunting, imitation evergreens, velvet tassels, and potted palms. To undertake the completion and ornamentation of thousands of square feet of exhibit space, with the same degree of care as that given to the outside of buildings, was a task approaching heroic proportions.

In designing interiors, two major objectives had to be satisfied; first, laying out spaces of a size, location and general attractiveness that would persuade exhibitors to purchase them; and second, the forming of a background of such character that exhibits might exert a maximum of appeal to the visitors. To accomplish these, the major buildings were planned to contain one or more great halls for special features at salient points, with connecting links between them. In the former, the principal exhibits were free standing and central, the hall being a great space surrounding the display.

The connecting links were aisles flanked on either side by exhibit spaces of unit sizes, which took on the nature of enframements. Not that this distinction was always clear cut, for often great halls, such as that in the Hall of Science, had exhibits enframed along one or more walls in addition to those on the central axis. The connecting links, likewise, offered a variety of treatment, such as aisles with exhibit islands, ramps with stepped exhibit spaces, galleries with many variations of exhibit offerings, and then stairs, passages, and entrances for circulation of visitors.

The first pavilion of the General Exhibits group was a clearly defined envelope for the great central exhibit of steel. Here the walls were treated uniformly and the running decoration—a mere change to a band of darker color—ran continuously around the room. The second pavilion of the same building, which housed an oil exhibit, was an example of partial use of wall surface for exhibit purposes. Here the color was broken to lead the eye around to the large drawing of oil fields and cracking machinery which covered the south wall. The ceiling was banded and divided to unite the front, rear and sides of the room to form a whole.

The circular hall of the Electrical Building was another example of the use of one side of the space for exhibit purposes, and the other side as a foil. The long hall in the Travel and Transport group was a combination of wall background and a surrounding for central displays.

Each group of exhibits had its own vertical panel background, similar in theory to a surrounding wall and plaster treatment. The colors used in each maintained the separateness of the panel unit, yet the selection of their color for value and intensity was such as to maintain uniformity of treatment and blend the Hall into a harmonious whole.

Advisory Service

The large majority of exhibits were installed in one or more standard exhibit bays which normally measured twenty by twenty feet. The architectural treat-

ment of these consisted of columns and lintels, within which the exhibitor might establish his own background and floor arrangement. While an extensive advisory service was extended to exhibitors by the Exposition management to assist in arranging their displays, this remained their prerogative. The Exposition, nevertheless, retained a rigid control over the development of the aisles, that there might be continuity of treatment and an equal opportunity for each exhibitor to present his best showing without interference by his neighbors.

The side panels of the exhibit bays were the steel columns which supported the roof or floor above. These were left exposed, not merely to save the cost of boxing, but because their "I" shaped cross section permitted an interesting treatment of paint and an easy construction for dividing partitions. Contrasting colors were carried on web and flanges of the columns, giving the emphasis of salient and interior planes.

The lintel part of the enframing was of uniform design and constituted a light shelf for the illumination behind cut-out letter signs. The backgrounds were generally white to reflect the light from the concealed sources, and permit the letters to stand out in bold relief. These signs gave opportunity for each exhibitor to announce his name and wares and by their uniformity made a pleasing appearance and assured that an adjacent sign would not have a dominance.

Attempts were made to complete the frame along the floor line by such devices as a floor raised several inches above the aisle. The latter was emphasized in the early designs, as it was felt it would help set off the display and facilitate the nightly cleaning, because the accumulated trash could be readily swept into the aisles. It was abandoned, however, when it was realized that it would constitute a hazard as packed crowds could not see its existence. The general solution was to leave the front of the exhibit space free of obstructions, unless it was desired to have a closed room, in which case walls were built from floor to ceiling.

Gay and Assertive Atmosphere

The painting of the interiors was planned to accomplish several clearly defined objectives. While the colors were gay and assertive, their selection and arrangement were such as to set off the exhibits and the architecture. Painting fulfilled its primary mission by subtly and unobtrusively directing the visitors' interest to focal points, by orienting him or influencing his movements, by creating moods and atmosphere, and by completing or balancing the picture. When its motives became too obvious, or when it became the center of interest, it registered at least partial failure in design.

The exhibits themselves were obviously of prime consideration and the purpose of their setting was merely to present them in the most attractive way to the public. Many exhibitors had not the talent in their own organization to present properly their display and when they obtained the services of an interior decorator or architect, all too frequently the accent was placed on the background rather than on the exhibit.

To meet this need, the Exposition established a division to assist exhibitors in arranging and decorating their spaces, and to head this highly important service, Louis Skidmore, who had rendered outstanding service as Chief of Design in the Works Department, was transferred to the Exhibits Department.

While this division designed many exhibit areas in toto its primary function was to approve the plans submitted by the exhibitors, and where they were not in accordance with regulations or had not made the most of their opportunities, to offer suggestions for changes and improvements. Most of the exhibitors made full use of the aid which the Exposition could offer them.

It was not uncommon to have an exhibitor present a design for his space, with the concentration in the wrong direction. There would be sumptuous settings, with velvet drapes, gold tassels, corded railings and other trappings, smothered in architectural detail. It was a pretty picture, decorative and dazzling to the exhibitor, but the exhibit itself had been obliterated by the glitter of the setting.

Such sketches received frank and sometimes devastating criticism, which was not always received with good grace. Generally, however, the exhibitor quickly saw the reasons, and after further discussion of his advertising objectives, his products, and other phases of his business, resubmitted acceptable designs. Sometimes the exhibitor's architect was more tenacious upon traditional treatments than his employer. He would have to be convinced that his plan was incongruous in the modern setting of the Exposition and that he could render his client best service by forgetting decoration and concentrating on the display, giving a setting which clearly defined the exhibit but was entirely subordinate to it.

Color, form, line, illumination, and texture were all employed to the best advantage, but none of these elements was important except as it contributed to the exhibit itself. For instance, if the exhibit itself had interest in color, it was given a neutral gray, or black and white setting, but if it had no color, or a dominant one, then the space would be so painted as best to set off the exhibit.

Zoned Colors Help Visitor

Throughout the buildings, colors were zoned, and while this produced a pleasing harmony of design its greater purpose was to orient the visitor as to his location in a section and to guide him through a sequence of exhibits, somewhat as "Follow the green line" principle. The continuous light shelf along the corridors, which formed the upper part of the enframing for exhibit spaces, offered an opportunity for a continuity of color on the soffit and the lip of the light shelf. The soffit was usually painted in contrast to the columns below it and the lip repeated a color of the columns.

In like manner contrasting colors were carried on the webbs and flanges of the exposed "I" beam columns, and could be reversed in location to establish an axis at right angles to the main traffic route. The colors on the horizontal bands and the columns served to connect the color treatment of the great halls or to announce the limit of extent of an exhibit classification.

Ceilings served a similar purposes. For example, the Great Hall of the Hall of Science established electric blue, white, grey and aluminum as colors, and the science exhibits in the connecting corridors were linked with a turquoise blue ceiling, and a grey and white lintel and column treatment. Medical Science, in the same building, was announced by a blue red lip and light shelf treatment which culminated in a niche surrounding the central medical exhibit. Yellow was used to denote the industrial exhibit areas and the three colors were combined on ramps and staircases where no special exhibit character governed. Thus, color indicated to the visitor which section he was in and led him to the next, and gave a pleasing transition by combinations of colors between connecting sections.

With the exception of the columns, all structural members of the exhibit buildings were concealed, the walls and ceilings of gypsum board offering opportunities for color and decoration. This applied to areas other than those occupied by exhibits, such as entrances, stairs, and connecting halls. They permitted a treatment of sufficient interest to lead the visitor on, to impart a sense of expectancy, of something new ahead. Here, color and lighting were used full force. They marked points where a change from exhibits rested the visitor, perhaps by making him conscious of the architecture he had seen outside, then giving him a glimpse beyond, on which his attention might be again concentrated.

Theory behind the Paints

The theory behind the painting of the large exhibit halls was similar to that of areas without exhibits. Here, the surrounding architecture would attract some attention, and, feeling the distance from the central object to the walls around, the visitor would unconsciously observe them. So they were designed to have a middle ground of interest, to hold the visitor's eye for merely an instant, when his attention would bound back to the center of interest. Hence, the color changes were few and in quiet relationship to one another.

In planning the interior decoration, it was assumed that in the bustle and jam, and with thousands of displays competing for attention, small detail had no place.

Ornament has always been the place where craftsmen told a story, though it might only be the fact that the decoration was interesting to do, or showed the craftsman's skill of hand. There was little opportunity for the transient population of the Exposition to notice this skill, for small details in coloring require time to appreciate as they require time to produce.

Consequently large areas were treated to tell a story or produce a pattern by large murals of simple lines, or mere arrangements of large blocks of color. They were direct in their appeal and had the friendly quality of not requiring too much attention or of being too difficult to understand.

The mechanics employed in applying the paint to the interiors were similar to that of the exterior. In general, the same contractors were used, and under the same contract. There was some duplication in the palettes. The priming coat was aluminum, and except for some light colors, one coat was sufficient to cover. Both oil and casein paints were used.

SCIENCE—THE BASIS OF EXHIBITS

In the outcome of every venture there is a determining factor, and the degree of success is proportionate to its quality. From the beginning, it was evident that exhibits must express a definite philosophy and that in them would lie success and through them the Exposition's challenge for recognition. Without this essential distinction of spirit, the most elaborate exterior trappings would be as hollow as a book of exquisite binding whose pages were literary trash. The first exhibit studies, therefore, were dedicated to determining basic requirements.

Since the turn of the twentieth century many new avenues for enjoyment had opened for man. Any venture falling within the category of entertainment accordingly faced a competition as certain as it was exacting. To equal this situation, the compulsion of providing an idea unique enough to conquer rivalry was recognized. If this idea could be expressed in a central theme sufficiently quickening to the imagination and stimulating to the interest to transcend these widened opportunities for diversion, the necessary urge for visiting the Exposition would have been provided. And, while the theme must have its appeal through those higher concepts of education, science and culture, it was realized that their interpretation must apply showmanship and entertainment of high order, for people visit an exposition with a carnival spirit, hoping to be amused and diverted from humdrum routine existence by dreams of fantasy. That these could be successfully combined was amply attested by the results.

Selecting a Central Theme

The all absorbing question, then, was what should be the central theme. It re-

quired no particular analytical ability to see that it would have to be one of general appeal. At the same time, it was necessary that it have a definite coordination with the centennial celebration concept. The problem resolved itself into the creation of ideas, with a subsequent decision as to what combination of them could be evolved into a theme which was idealistic and at the same time practical.

Turning to the lamp of experience, three conclusions could be drawn. First, that previous expositions had their exhibits wound around the theory that competition is the life of trade and offered scores of medals and blue ribbons for excellence of product and exhibit. Second, that the exhibits had not been tied together by a common philosophy but interest and effects were individualistic rather than collective, with no attempt at coordination as a whole. To present them as related units fused to a central motif was an experiment never yet undertaken on a major scale. Third, that the industrial type of show had become increasingly popular over the previous state fair and amusement park varieties, despite the fact that the standards of these two latter were higher than ever before. To determine the reason for this would have been an interesting path to explore, but one which had to be passed by. Fortunately for the Exposition, however, the experiences and deductions of the state fair and amusement park officials were most generously put at its disposal, thereby saving much study and research.

At this juncture of the Fair's evolution, Dr. George E. Hale, Director of the Mount Wilson Observatory, suggested that the theme of the Exposition might be centered upon the service of science to humanity during the past hundred years.

A few months later, Dr. Michael Pupin, professor of electromechanics at Columbia University came to Chicago for an address to the Commercial Club. At an interview between him and Exposition officials Dr. Pupin was much impressed with the suggestion of Dr. Hale, and expressed the opinion that the National Research Council might be induced to sponsor the Exposition's activities in such a field. Created by Abraham Lincoln during the Civil War, and re-created by President Wilson during World War I as the best means of pooling the scientific minds of the nation for military offense and defense, the National Research Council had been commissioned after the armistice by President Wilson as an agency for framing and guiding the machinery of peace and progress.

That the sponsorship and support of such an organization would be invaluable was immediately recognized by the officials of the Exposition, who foresaw that its national charter, distinctive character and past accomplishments would admirably qualify it for the mobilization of the scientific knowledge of the nation. Its accomplishments had already gained for it the respect and confidence of the technical leaders in science and industry, and brought it into intimate contact with the personnel of universities and institutions of science and technology, and had given it a unique position of trust and favor in scientific and technical circles throughout the world.

To celebrate the successful union of science and industry immediately caught the imagination of the foremost citizens of this nation. Here was indeed fertile soil for the fructification of such a suggestion. Not only did it offer a superb

theme but, could it have the association of the National Research Council to lend an immediate national and international flavor, it was peculiarly appropriate as a birthday commemoration. From that time on there was never any question concerning the theme itself, all discussion being confined to the most practical way of relating it to every activity of the Exposition.

The Science Advisory Council

During the months of negotiations that ensued, the Exposition had no more steadfast ally than Dr. William Allen Pusey. A member of both the Exposition's Board of Trustees and the Executive Committee of the National Research Council, he labored indefatigably to bring about their partnership. The universal respect which his high personal character, his reputation in the medical profession, and his years of experience in the educational field commanded, yielded to his efforts a marked consequence. Dr. George K. Burgess, Director of the U. S. Bureau of Standards, who was then Chairman of the National Research Council, Dr. Vernon Kellogg, its secretary, Dr. Frank B. Jewett, Vice President of the American Telephone and Telegraph Company, and Mr. Gano Dunn, President of J. G. White and Company, early lent the stimulus of their interest.

These endeavors culminated in the endorsement by the National Research Council, on October 9, 1928, of the proposed theme of the Exposition, and the authorization of the appointment of a special committee of forty members for the consideration of such development. In December, this committee, as the result of a series of conferences with Exposition officials, submitted its report to the National Research Council. The report endorsed the feasibility of the Exposition along the lines contemplated, and recommended that the Council should provide advisory assistance. It authorized the immediate formation of a large and representative committee as a coordinated point of contact between the Exposition officials and the necessarily scattered membership of the National Research Council to carry out the proposed projects. Dr. Frank B. Jewett was appointed chairman of this committee. No selection could have been more fortunate. The sterling character of Dr. Jewett and his unfailing sympathetic grasp of the Exposition's problems were a source of constant encouragement and help on many phases of the Exposition's activities.

Between the summer of 1928 and the spring of 1929 the Science Advisory Committee organized sub-committees composed of leaders in the various branches of science, to prepare reports covering every phase of scientific development during the century, and especially to suggest how the achievements in pure science could be displayed at the Exposition.

It was apparent that as a practical necessity the committee must have a clearing house. While, from the operating standpoint, the location of such an agency in Chicago was desirable, the wisdom of its establishment in New York was recognized. Close cooperation with the National Research Council whose base was in the East would be essential; the sterling stamp of the entire undertaking would be lost if the Exposition exposed itself to the slightest hint of controlling the com-

mittee's views and recommendations, or if ideas were curtailed or directed by the impingement of the practical necessities inherent to an operating base. Mr. Maurice Holland, Director of the Division of Engineering and Industrial Research of the National Research Council, was assigned to the New York office, as executive secretary. He was ably assisted by Mr. Robert P. Shaw, later director of the New York Museum of Science and Industry.

The membership of the subcommittees totaled over 400 and months were spent in frequent meetings and intensive study. Their 33 reports covered every phase of scientific development during the past century, contained recommendations to the specialists in each field and suggested how the achievements in pure science might be utilized for the purposes of the Exposition. The list of basic discoveries, after the elimination of many considered fundamentals, reached into the thousands. Studies were carried on by the central committee endeavoring to group them by science and by industry. Chronological and schematic buildings were laid out endeavoring to combine them in three dimensional space. Radial aisles would trace the development of an industry, circular intersecting aisles would show the application of a particular science to each industry, and floors one above the other, would show the developments of industries and the sciences through the years.

It was a most intriguing concept but one which the practical limitations of space and money forbade. Rough calculations indicated that a single building practically the size of the entire fair grounds would be necessary to house it. The report for Physics and Optics, for example, suggested over 900 exhibits requiring a total area of 160,000 square feet. It was obvious that few visitors could be expected to devote four or five days to see such an array of exhibits in the Physics section alone.

Thus, practical considerations dictated the establishment of the policy to show only the fundamental discoveries, or milestones, that marked the path scientists had traveled in their search for knowledge, to illustrate only such significant achievements as the discovery of the relationship between electricity and magnetism, the classification of the elements, and the development of the atomic theory.

With their field of endeavor narrowed and clearly defined, the scientific staff began the difficult task of adapting the reports of the Science Advisory Committee to space and other practical limitations.

Basic Science Exhibits

To Dr. Henry Crew, professor of Physics at Northwestern University was entrusted the task of translating the magnificent concepts of the Science Advisory Committee into practical exhibits in the basic sciences. Dr. Crew was a constant source of admiration. Already past seventy, he attacked his pioneer task with a vigor that others envied.

Scientists of repute and experience were selected to head the several sections of this division: Capt. F. H. Roberts, in Mathematics; Dr. G. S. Fulcher, in Physics; Dr. I. E. Muskat, in Chemistry; Dr. J. F. W. Pearson, in Biology; Dr. J.

Volney Lewis, in Geology; Dr. E. J. Carey, in Medicine; and Dr. Carey Croneis, in Geology.

It was considered unnecessary to show exhibits in astronomy, when the magnificent Adler Planetarium in which the subject was covered so adequately under the directorship of Dr. Philip Fox and Miss Maude Benot, was within the gates of the Exposition. Arrangements had been made with the South Park Commissioners to maintain an expanded Planetarium program and this proved to be one of the outstanding educational features of the Exposition.

For four years the Basic Science staff labored to correlate, select, construct, and install scientific exhibits; they supervised all scientific publications; and arranged the program of scientific meetings. To them goes the credit for accomplishing a most difficult task in bringing into physical being exhibits within the Exposition budget, without departing an iota from the standards held up by the Science Advisory Committee.

It was first recognized that science exhibits must appeal to the non-scientific mind and to those who were in daily contact with the applications of scientific principles to industrial development, yet who realized only dimly the nature and significance of the scientific discoveries on which the necessities and luxuries of life are based. To help the average citizen to understand the work accomplished in the pure sciences through displaying examples of outstanding achievements in this field would lead him to a deeper appreciation of the service of science to society, and by giving him an opportunity to become oriented in the mysteries of science and by stressing the influence of scientific progress, his continued support of research in the pure sciences might be assured.

That these concepts could be realized was evident as the public crowded into the Hall of Science. The exhibits seemed to satisfy some need of which not even the Exposition was entirely aware when they voiced the serious purpose of the project. On days of slack attendance which etched worried frowns on the faces of concessionaires, the aisles of the Hall of Science were jammed with visitors, slowly reading and assimilating messages on impersonal unemotional science. On crowded days, they stood ten deep around the Geological Time Clock, studied lessons in electromagnetism and listened to lectures on Mathematics. It was proved conclusively that exhibits of pure science, properly presented, are a show of high entertainment value.

But what baffled and delighted the men of science, the technicians and mechanics, whose industry and ingenuity produced the exhibits in this great structure, were the youngsters who accepted it as their own. With the rides of the Midway beckoning, with the rocket cars of the Sky Ride lurching invitingly overhead, with popcorn and hot dogs to be purchased and munched on the Avenue of Flags close by, they flocked to the Hall of Science. That the majority of them were there for a serious purpose was indicated by the intelligent questions asked and the quantity of Basic Science exhibit catalogues they bought.

As you entered the Hall of Science, up the ramp from the Avenue of Flags, or from the main stairway to the east, your first impression was of the great



Night Scene from Skyride.

Greyhounds Call at General Motors





23rd Street Plaza Connected with Island.

Ford Building at Night.



Hall with its decorations of geometric designs illustrating the idea of having ornamentation in keeping with the function of the interior. Dominating the Hall was a Periodic Table of the Elements. The ninety-two then known elements were shown as they occurred in nature and in their pure form, together with examples of their use in industry. At one end of the Hall was the "Clock of Ages," with its ten-foot dial representing the advancing geologic periods by compressing our world's two million years into one revolution of the clock hands in four minutes. At the other end, one above the other, were the stratosphere gondola of Dr. Pickard and the Bathesphere of Dr. Beebe, vehicles which had carried man into the highest layer of the atmosphere, and the lowest of the ocean depths.

In the section on Geology the story of the origin and growth of our planet was told. Here were volcanoes in action, spouting geysers, the upheaval of mountain ranges, the creation of canyons by cataracts, gold and coal mines, underground torrents and moving sand dunes. The composition of the globe's center was shown by illuminated sections and working models revealing the working scientific knowledge of the core of the earth. Visitors tested model seismographs and saw how geologists use them to get records of miniature earthquakes produced by dynamite.

The Mathematics ("Queen of the Sciences") Section undertook to illustrate and explain the concepts of abstract mathematics by moving object lessons. Cubes, cones, and ellipses changed into other forms. Einstein's Theory of Relativity was explained by a series of exhibits, and an attempt was even made to make the concept of a fourth dimension comprehensible to laymen. The fallacy of perpetual motion was shown by historic models and the hidden contrivances necessary to make them operable.

The Physics Section was divided into a series of exhibits covering gases, sound, electricity, radio, and light.

Many spectacular exhibits told the story of Chemistry: mercuric oxide heated in a quartz retort and breaking into component parts, ribbons of iron burning like paper in a jet of oxygen, a stream of liquid fire caused by a jet of phosphorous forced through a small orifice and instantly combining with air, liquid air, colloid chemistry, oil refining, and production of rubber. A giant talking and gesturing robot, ten feet tall, with a transparent digestive tract was a dramatic feature of the exhibit of physiological chemistry.

In the section on Biology, a bass wood twig, magnified to seven and a half feet in diameter, added a year of growth in seventy-five seconds, becoming nine feet in diameter by the accretion of new material. In the Microvivarium drops of water were magnified by high-powered projection microscopes, so that on the screen one could see in action the ferocious, weird, microscopic living creatures contained in the water. Here the story of how life takes form was told from the primitive cell to its highest evolution in man, magnified cells and moving models demonstrating the principles of growth.

No formal exhibit, such as the Medical Section, had ever been made in this

country at least, in a similar exposition. Dr. William Allen Pusey, outlined the plan and organization of the exhibit, and Dr. Eben J. Carey, Dean of the Medical School of Marquette University, developed the actual exhibits.

The general plan of exhibit was that it should be made with a view to interesting both physicians and the public and that it should illustrate first, the basic scientific facts in medicine; second, their application in the practice of medicine; and, third, the arts and sciences which produce the chemicals and instruments used in the practice of medicine.

In carrying out the plan it was necessary to get the active support of the great medical organizations, of representative physicians, of teaching and research institutions, and of commercial and industrial organizations that produced medical and surgical supplies. It also was necessary, in order to get the support of these, to keep the exhibit free from charlatanism. All of these ends were attained to a degree that gave the exhibit the approbation of those experienced in medical displays.

The exposition provided space, rent-free, for exhibits in the Medical Section and gave due credit to the institutions sponsoring them. The institutions sponsoring the exhibits bore the expense of transporting, installing and insuring their displays, and supplied their own personnel during the operating period.

In cooperation with the Chicago Medical Society, the American College of Surgeons, and the Municipal Tuberculosis Sanitarium, a series of popular lectures on medical subjects was prepared for delivery during the Exposition. During the convention weeks of the American College of Surgeons, popular medical talks were broadcast by outstanding physicians, surgeons and dentists.

The outstanding exhibit in the Medical section was the transparent man, a full-size figure with all the organs of the body in place and illuminated in turn. An exhibit which attracted wide-spread attention showed the various stages in the growth of the human embryo. Elsewhere there were displayed cross-sections of human bodies and models showing the physiological relations of the thyroid, pituitary, suprarenal and sex glands. The development of modern surgery and pernicious anemia, work on goiter, diseases of the digestive tract and the nervous system were illustrated.

All of this touches but a few of the high spots of the science exhibits in the Hall of Science. There was a complete catalog describing the exhibits in detail available to visitors at the Fair which can now be found in libraries. It is a valuable reference work for anyone interested in science museums.

Though designed ahead of the exhibits it housed, the Hall of Science adapted itself remarkably well. Thrown across Leif Eriksen Drive at the South end of the Avenue of Flags, connected by bridges to Northerly Island to the east and the General Exhibits Building to the south, it became an inevitable destination for visitors circulating through the grounds. Gentle ramps and graceful stairways invited entry. Its commanding position and the skill of Paul Philippe Cret combined to impress upon the visitor the fact that the Hall of Science was indeed the centerpiece of the Exposition.

As the construction of the Exposition progressed, the economic depression deepened. In their great need for exhibits essential to the telling of their story, the scientists turned salesmen. Armed with drawings and floor plans, they called upon individuals, schools, laboratories, research institutions, museums, and industries which applied scientific principles to the manufacture of their products. In payment for a specified display all these "salesmen" could offer was a modest printed sign bearing the sponsor's name to be placed on the exhibit, and his name in italics in the Basic Science handbook.

Allotted a certain number of A Century of Progress bonds to be used in lieu of cash, the men of science once more made the rounds of laboratories, research institutions and professional exhibit makers, this time asking them to construct exhibits in whole or in part for bonds.

The sale of certain exhibits, for delivery after the close of the Exposition, provided funds necessary for the construction of other displays. The Mayo Foundation bought the Transparent Man, the Buffalo Museum of Science bought a number of exhibits, and the Museum of Science and Industry of Chicago contributed \$10,000 for the construction of several physics exhibits in which it was particularly interested and which became the property of the Museum after the close of the Exposition.

Visitors discovered a well-filled and complete Hall of Science on opening day. The spirit of the Science Advisory Committee's reports had been carried out. The majority of self-operating exhibits functioned efficiently from the start, and it was evident that the Exposition had opened an entirely new field of display in perfecting exhibits of this type. Adjustments had to be made and various weaknesses eliminated, but in a few weeks all exhibits were operating smoothly.

By that time, legends which, on opening day, were typewritten and tacked on the walls had been printed and properly installed. Experimentation with signs was carried on up to the close of the Fair in an effort to produce labels which were entirely satisfactory both as to subject matter and physical features such as illumination and location on exhibits. Previous study of museum labels indicated that they had been written to amaze curators of other museums and were too abstruse to be understood by the general public. A single label could not be so worded as to be understood by the grammar school pupil and yet supply all the technical information for the advanced student. Two separate labels provided the solution.

Exhibit Techniques

Coincident with the selection of subjects for exhibition went experimentation on methods of display. In January 1931 three bays were set up on the ground floor of the Administration Building, assigned to biology, to chemistry and to physics. The production and installation of exhibits in these sciences called for a development shop and laboratory facilities equipped with necessary machines and tools. It was under the supervision of Carl Dietrich.

Skillful mechanics and draftsmen were employed, and the shop became the

proving ground where the brains of the men of science, divining the goal, joined forces with the ingenuity of the workmen to achieve it.

Certain problems could be solved by immediate experimentation, and small self-operating exhibits were constructed in the shop and placed on display. Visitors to the Administration Building, prospective exhibitors, technical advisers, professional exhibit makers, the executive staff and employees of the Exposition were invited to view these first efforts. The result was the decision that exhibits which operated automatically, though expensive to construct, were superior both as to showmanship and mechanical performance, but that the displays would have to be considerably enlarged in order that they might be viewed in comparative comfort by entire groups of people at one time. Viewing the result, no visitor could have any realization of the difficulties involved in constructing displays to operate automatically twelve hours a day for the entire period of the Exposition.

The preparation of chemistry exhibits exemplified these problems. To show a chemical principle one must apply various forms of energy together with chemical reagents which are used up and must be replaced. Refuse and by-products must be removed. Fumes are produced and proper ventilation must be obtained to remove corrosive and poisonous gases. Great care must be used to obviate the danger of fire and explosions. It is one thing to heat mercuric oxide in a test tube and show that mercury and oxygen are formed, but it is quite another thing to construct a dynamic exhibit which will automatically perform this reaction without fail once a minute, every day for a hundred and fifty days. Again and again the development shop and the laboratory were called upon to make exhibits that not only had not been made before, but exhibits which the Division had repeatedly been told could not be made.

Three dimensional models had been vogue for many years, but there was developed in England in the 1920s a new technique of presentation known as the "diorama." It differed radically from its predecessor, as all of the objects were in perspective. This required that they be relatively small in size, seldom more than five feet at the proscenium opening, for the illusion of deep perspective could be best obtained from a narrow angle at the front. In the process of production, the various objects, when viewed from above, appeared grotesquely distorted, but gave an amazing effect when viewed properly. Special mathematics and skill were required in their production, so Mr. Edward J. Ashendon, who had developed the technique for British expositions, was brought over from England. He established a studio in the Administration Building where he trained a number of students in their production. Their effect was so realistic that many exhibitors desired to use them in such numbers that they lost sight of the many other techniques of exhibit display. It became necessary to take precautions against using them as a panacea to solve all exhibit problems.

Out of the argument, discussion and experimentation finally evolved a uniform policy with regard to all exhibits which was predicated upon the following considerations.

1. The exhibits should be inspirational as well as instructive.
2. The exhibits should be dynamic rather than static, and constructed to withstand hard use and even abuse.
3. The exhibits should be self-explanatory as far as possible rather than dependent upon long descriptive labels.
4. The exhibits should be limited to a series of well-chosen representative displays rather than inclusive of a large number which would only confuse the visitor.
5. The exhibits should be arranged in logical sequence.

Special Features

From the very start, it was realized that science is a purely human achievement and that living men of science and the method which they employ are its chief characteristics. Gatherings of scientific men, it was thought, would be helpful in every way. And since the Exposition, like science itself, was to be international in character, it was decided to join with the American Association for the Advancement of Science in the invitation of foreign scientists to be guests of the Chicago meeting during the Exposition. Seventy-three invitations went out. Some thirty-eight men sent acceptances and were present at the meetings and presented important papers.

In July, 1930, a committee on Scientific Publications was appointed. The intention was to make a distinct contribution to scientific literature for young people and for thinking men who had not been trained along technical lines. The committee was fortunate in finding an excellent publisher, Williams and Wilkins, willing to assume entire financial responsibility for the series. The twenty volumes of the series were all off the press before the Exposition opened.

With the cooperation of the Crerar Library, a library of 1,000 volumes was assembled in the Hall of Science, covering six of the fundamental sciences being shown.

The need for a catalog of exhibits in the basic sciences was recognized as plans for the Hall of Science developed. Accordingly a handbook was prepared containing descriptions of all the Science exhibits.

The Basic Science Division also was responsible for completing arrangements for demonstrations of educational motion pictures in the Hall of Science. Early in the spring of 1933, the University of Chicago Press suggested daily programs demonstrating the new type of educational motion pictures produced by the University of Chicago. Many of these pictures, the result of intensive research and the special work of distinguished scientists, treating the subjects of geology, astronomy, physics, chemistry and biology, had never before been presented to the public. The intelligent selection of these pictures tended to increase the interest and to clarify the interpretation of scientific exhibits found elsewhere in the Hall of Science. The films also demonstrated how the motion picture can be used to advantage in showing the natural processes of growth and development and the laboratory procedures and lecture methods utilized.

Not only inside the Hall of Science did Dr. Crew's work flourish but it also distinguished itself in stage form in the Science Theater. The Arcturus ceremony was ably supported by scientific demonstrations put on in cooperation with industrial firms. "Music By Telegraph" demonstrated how a musician seated at an ordinary telegraph typewriter, in a far off city could play on the Hall of Science carillon. The Clavelux color organ, electronic wave musical instruments, amateur short wave, two-way radio, the phenomena of sound, liquid air and other chemical demonstrations were given to large outdoor audiences.

The great lesson learned from the Hall of Science, which bears repetition here, is that exhibits in pure science, when properly presented, make a show of high entertainment quality. Records of attendance indicated that visitors, with a free choice, attended the Hall of Science in numbers thirty times as great as that of any concession on the Midway. It is a clear indication that, while people come to an exposition or a Museum with a primary idea of a pleasant occasion, it is essential that they leave, feeling that their visit was worthwhile through the knowledge that they have absorbed and which will be of value to them in their later lives.

Chapter 13

INDUSTRIAL EXHIBITS

While the Science Advisory Committee was preparing its report the exposition staff was engaged in assembling data on industrial exhibits and endeavors were being made to arrive at policies which were later to become the basis of the exposition's rules and regulations for exhibitors. Inquiries were directed to the various trade associations to ascertain whether it was feasible to expect cooperation from the industrial groups in presenting collective exhibits.

Out of its contacts and conversations with the trade associations emerged one very significant fact—that industry considered it a good investment to buy exhibit space. Despite the precedent of other fairs in giving away exhibit space, it was clear that to sell it was a practical means of realizing the Fair's need of additional financing. The thought was father to action, and calculations were carefully made on the extent of charging, the amount and the basis therefore.

While the revenue from the sale of space to exhibitors was essential to the completion of the Exposition, other important factors influenced this decision. Chief among these was the conviction that what is given away is seldom appreciated, but when a substantial sum has been paid initially for the space, it offers a powerful incentive to put on an exhibit of real merit, and not merely fill the area. The amount to charge was problematical. A research in building construction methods was conducted, and it was found that by using the least expensive methods then available for the exposition type of building, the cost would be approximately \$5.00 a square foot for gross space in the building. After elimination of such public areas as aisles, rest rooms, and general exhibition spaces, from which no revenue could be obtained, approximately half of a building could be available

for sale. It would, therefore, be necessary to charge \$10 per square foot for net space in order that the exhibitors might pay the full cost of the building. This would also place the exhibitors in rented space on a parity with those who constructed their own buildings. To the latter, no charge was made for ground space, but they undertook all expenses within their assigned areas.

Collective Exhibits Not Practical

It was first contemplated that there should be collective exhibits by industries rather than by separate corporations or business. It was believed that exhibits should be the product of scientific, industrial and social agencies organized for the promotion of industry and the betterment of human beings rather than the advancement of competitive individual interests. The fact that competition had become a struggle among different industries in a given field as well as between members of the same industry and that trade associations were active in elimination of waste, the improvement of production and sales methods and the promotion of scientific research, encouraged anticipation of a cooperative display of their wares and processes.

In furtherance of this idea the industrial and agricultural fields were solicited. Though they listened with interest and expressed their approval, it was found that the sentiment which united a trade association was not yet strong enough to establish complete cooperation among the members and build a fair by 1933. In the distribution of expenses, in the selection of agents to prepare the exhibits, and in the choice of exhibits, controversies arose which, in most cases, blocked any concerted action within the time available.

Harvey Sconce was active in the early inquiries into the agriculture field. When the collective plan collapsed, Dr. A. W. Bitting, retired from his work in development of pure food laws and standards, carried the agricultural exhibits to their successful conclusion.

With the emphasis shifted to individual exhibits, the industrial field was reclassified into transportation, communications, electrical, agriculture, home planning, general exhibits, and the social sciences. It was then proposed to invite participation by industrial corporations, associations, schools, institutions and other units interested in any of these categories with the Expositon itself setting up exhibits in the basic sciences. Those of industry would show the end products of science and invention, the relationship among all exhibits being correlated by insistence that the spirit of the Science Advisory Committee's recommendations be consistently maintained.

The industrial participation was placed in the capable hands of Col. J. Franklin Bell and a staff chosen from industrial fields. This phase of the exhibit structure had a tremendous range in order to show even a part of the applications made of basic scientific discoveries to man's material life—from a pancake to a steam engine; from a set of false teeth to an airplane; from a needle to a glass dwelling house. It was evident that the field was almost limitless. For there was no part

of man's material existence that had not taken on new form because of the work of some scientist in his laboratory.

The groundwork of general interest among industry had been laid first by the approaches through members of the Science Advisory Committee, many of whom were associated with industrial laboratories; second by the Exposition itself in the course of its exploration of the subject of collective exhibits.

Col. Bell gathered about him an earnest, eager, and capable staff of men who discharged their duties with high-minded zeal and competence.

Tangible progress in securing binding agreements could be obtained only by positive answers to fundamental questions which would be asked by every potential exhibitor. What space is available? What can we show? Will we be protected against labor troubles? What will my competitor do? Who else is going to make presentations?

As a pilot plant, to give a practical test to theories, the decision was made to start the Travel & Transport Building, as the center of the transportation exhibits. While its plans were being drawn, parallel work on the exhibit rules and regulations and contract forms proceeded apace. In them were incorporated the wisdom garnered from the study of the history of other fairs, from personal visits to current trade fairs and expositions both in this country and abroad, and from the indications of our own experience. If these forms seemed arbitrary, it was in recognition of the need of such control that no part should ever become more powerful than the whole and thus jeopardize the entire structure.

An equally important decision was taken, to follow erection of the Travel & Transport Building with that of the Electrical Building. It was also thought to try to obtain more agreements to take space in this building in terms of footage with specific locations, susceptible to later floor plans. If this could be done, it would open a new vista for the correlation of financial needs and floor plans.

The first industrial contracts for exhibits were signed in May, 1931 by an intrepid group of individual corporations whose vision was undimmed by absence of rules, floor plans, or exhibit details. To them—Western Union, Baltimore & Ohio, International T & T, American T & T, and General American Tank Car—the Fair owed its ability to prove that it would have industrial exhibits. At about the same time promises to sign contracts were given by Westinghouse, General Electric, RCA, and the Rock Island Railroad. With such encouragement and with ground broken for two buildings besides the Hall of Science, the fair could announce a general plan of exhibit buildings. So conclusive was the effect upon other exhibitors that a steady stream of contracts followed.

By January of 1933, the exhibit areas were well defined. The various Exposition buildings in which space had been rented were flanked by special buildings and outdoor displays of exhibitors who showed some particular phase of the industry concerned. The areas were:

The Travel and Transport, to show railway, marine, aviation, and automotive exhibits and their allied products.

The Electrical Group, to display exhibits of electrical equipment and supplies,

those of the electrical utility companies and of the communication and radio industry.

The Agricultural, to show food, farm machinery, horticultural and dairy products.

The General Exhibits Group, for the various industries which could not logically be shown in any of the preceding. The five pavilions were devoted to mineral industries and industrial engineering; graphic arts and paper products; furniture, office equipment and sporting goods; jewelry and cosmetics; and textiles.

The Home Planning Group was primarily to give the manufacturers of new kinds of building materials or developers of new uses for standard materials an opportunity to show what they could do in building small, inexpensive homes.

Agriculture and Foods

Logically, the agriculture and food exhibits began in the Hall of Science where the visitor could see that the discoveries of scientists had aided amazingly in the agricultural progress of the last hundred years. Biology had pointed the way to improve plants and animals by selection and breeding and to adapt them to new living conditions. Chemistry had taught how to banish or put to good use insect life and fungus growths and to analyze soil and enrich it. Physics made possible larger and better cultivation by means of farm implements, power to lighten the farm tasks and to increase profits. Meteorology told the farmer the best time to plant and to harvest. Medicine had played its part in the prevention and cure of animal diseases.

These various phases vied with one another in telling part of this tremendous story of the last century—a story the results of which have been so great a factor in the improvement of man's everyday way of life and his material fortune.

Outside the agricultural building the visitor was tempted to believe himself in a tropical or semi-tropical clime, for here flourished orange and lemon trees, grapefruit and other semi-tropical vegetation—blooming, bearing fruit, and ripening, as the season went on. Within the building one read the story of foods, their production and preservation and their distribution. This saga was told by dioramas, moving models and actual processes. In one section salt was brought up from a mine and purified, while in another one could see how salt is obtained from the great beds near Salt Lake City. There were exhibits of the treatment of the leaves of the tea plant and of the berries of coffee. Other staples and their way of production and life were shown. One especially interesting exhibit was that of a great commercial cuisine, and its evolution from the primitive and old-fashioned home kitchen.

By dioramas and models, the live stock industry was shown from the lone cowboy on the range, through the modern feeding farm, the corn fields and moving trains of livestock on their way to market. The livestock and meat industries held sway here, and left nothing undone to show the great advances that have been made in the development of livestock and the treatment and

preservation of meats. The history of these industries was also told, together with an account of the distribution of meats and the methods taken in the handling of them for the protection of the public.

The mechanization of agriculture was portrayed by dioramas, actual machinery, such as the latest types of tractors, cultivators, corn pickers and similar mechanized units. The history of the development of this new machinery-run farm was dramatically told.

In the Dairy Building was the shrine of the cow. In common with most good exhibits, it told a story. It began with the spectacle of primitive man worshipping the cow and later on when the caveman became transformed into the herdsman, he is seen caring for his cattle. The journey of the cow with the Pilgrims to Plymouth is a dramatic one as is also the trek of this friendly and essential animal into the great West with the trains of emigrant wagons. Then came modern days and the distribution of dairy products by modern facilities. Sanitation and refrigeration appear. Finally the happy children strong and straight limbed, the men and women healthy and vigorous testify to the grand finale, labelled "Dairy products build superior people."

The preparation of ice-cream, cheese, butter and dry milks preceded an exhibit permitting the visitor to follow milk from the country receiving station to the refrigerated tank car, to the receiving tank at the city milk plant, through the processes of the plant, and to the delivery wagon.

Down in the south end of the grounds were a lot of busy hens engaged in an egg laying contest. One Rhode Island Red bent upon breaking the record laid two eggs in one day. The contest was sponsored by the National Poultry Council. Nearby was a model farm house, with stables of draft horses, a model barn and dairy with thoroughbred stock in sanitary stalls, showing scientific production of milk, and an exhibit of the prancing goat, as he becomes a profitable member of the agricultural group.

A forty foot relief map showed a typical quarter section farm one hundred years ago, fifty years ago and in 1933.

Supplementing the story told in the Exposition halls were several special buildings. The Armour Building was devoted to the depiction of activities necessary to collecting, processing and distributing meat foods to the dinner table. In connection with the exhibits a solarium restaurant served selected menus emphasizing Armour products.

The Atlantic & Pacific Tea Co. gave a view of the merchandising of foods, attracting huge crowds to its amphitheater where daily programs of entertainment were given.

In 1934 the Continental Baking Company took over the Dairy Building to show the story of grain foods and of scientific breadmaking. Swift & Company took over the 23rd Street Bridge for an exhibit of packing products. A puppet show told their story and one of the high points of the fair was the auditorium in which occurred the Swift presentations of the Chicago Civic Orchestra.

The Home Planning Group

The home planning group provided a unique proving ground for new materials of construction and pioneered in designs then considered futuristic, but since adopted as standard practice. Unfettered by the wishes of a prospective owner, the designer could give full play to his imagination, and the architect could experiment with fantastic designs long repressed by the necessity of earning a living in planning more conventional houses. Visitors had the opportunity of inspecting and evaluating pre-fabricated houses, built of glass, steel and artificial stone, and of a wide price range. Some of the structures were demolished but most of them were removed elsewhere and occupied. There is no doubt that they exerted a profound influence on the future building of homes showing particularly how gracious living could be provided at relatively low cost.

The "lumber house" was untraditional except for its basic material and its sloping roof. The exterior was of California redwood, too rich to need paint. An innovation of corner windows opened up numerous possibilities for decorative treatment and arrangement of rooms. The ceilings were of Douglas fir, cypress, and birch. The floors were of oak, maple, and southern pine, and the door and window frames and sashes, of ponderosa pine. The living room was done in Appalachian white oak—sawn comb plywood panels on the walls and herringbone on the floor. The dining room was finished in American walnut from its veneered plywood walls to the parquetry flooring in Marie Antoinette pattern. In one bedroom the paneling was in oak and birch, and in another, wide knotty pine boards were used lengthwise on the walls. The dining room, set with wooden plates, appeared and vanished by means of panels, taking its place as a part of the living room when the panels were folded.

The brick house was all brick—walls, floors, ceilings and stairs. It looked like a slim ancient castle gone suddenly modern. There were three short be-angled stories with bias balconies. The ground plan was an irregular hexagon. The front half of the first floor was cut away for a driveway under the second floor porch. On this ground level was entry, laundry, and a playroom. A brick stairway led up to the living-dining room which with the kitchen occupied the second floor. All floors were of the natural brick ground to a smooth polish. The kitchen and bathroom were done in Carrara glass. With its three tiers, its odd decks and balconies and its queer cornered rooms, the brick house was altogether delightful.

Masonite, one of the then new materials, had been on the market but not well known. The Masonite house was a modern bungalow built on a wood frame, using Masonite Presdwood for both exterior and interior, on the floors and the walls. The decoration and finishing were designed to live with any furniture a new owner might have. The walls of the living room were papered with lapis Kiri, a Japanese laminated wood in sapphire blue. The curtains and furniture were off-white. There were oval cut-glass plaques on the wall and chromium chandeliers with frosted light bulbs in fluted cones. One bedroom was papered

with white, gleaming woven cellophane. The white glass curtains and green overdraperies were of knitted cellophane looking sheer and hanging heavily.

The Rostone house was built, a story and a fraction, of a new material made of a pulverized special limestone and shale pressed into panels showing that this material could be of various thicknesses of almost any desired color and moulded into any shape. This house was square-fronted and flat-roofed, with a wing on either side of the slightly taller center indented by a picturesque front door below a small window. All living quarters were on the ground floor, except the master bedroom which lifted the rear of the center to a second story and opened on the roofs of the wings. The decks and the entrance hall were paved in colored rostone which was used also effectively in the oak paneled living room. The solarium recreation room had a black parquet floor, a black glass and chromium fireplace, and walls of Chinese red with gold ornaments.

The Armco-Ferro Enamel house with its stately traditional lines and shuttered windows, except for the dull gloss enamel of its outer walls might have been standing for many years in an old New England city. Actually, it was one of the most innovative. It was a frameless all-steel two-story house built of factory-made house-high units with door and window frames welded in place. Walls and floors were of box-like units so fitted to each other that the house was put together in five days by six men.

The Stransteel House was of the new type of steel construction. The frame members were made of two channels with grooved backs welded or riveted together. Part of the house, which was conservatively cornered and angled, ran up two stories and utilized the roofs of the wings for recreation decks.

"Design for Living" was a modest, much-verandaed little house built of a composition material called Homosote and painted yellow. The ground floor had a porch at one end and at the other, an outside stairway led up to a roof deck on which the rooms of the second floor opened. The living room was Z-shaped with the dining room and a study opening off opposite ends. Above the book shelves, the walls were covered with copper sheeting. An aluminum fireplace was one of the outstanding and beautiful features of the house.

The General Houses house was a snug one-story cottage of all-steel frameless construction. Steel panel units like stage scenery were built at the factory and assembled at the Fair. The cold steel of the exterior was concealed under white paint. The insulation, it was claimed, was equal to twenty-four inches of brick.

The Cypress house was a mountain lodge in the best, most conservative tradition. Built of cypress logs to demonstrate the many uses of "the wood eternal," it was a picturesque building with casement windows, set in a garden where there was a cypress workshop in which demonstrations were given of carving from cypress "knees."

The "House of Today" was a quietly conservative house outside gone violently modern inside. The large two-story living room had a vaulted blue ceiling and a gallery. Its walls were lemon color; its Empire fireplace, black. Radio and telephone were both concealed behind Regency bookcases and a Regency chaise

lounge stood beside the fireplace. A circular dining bay, separated from the living room by a mirrored screen, was furnished in mahogany and there were crystal girandoles at the entrance. A colonial bedroom and a directoire one were connected by a bathroom. The kitchen indulged in concealed lighting, steel cabinets and every luxury of modern easy working.

The "House of Tomorrow" was a circular structure entirely of clear glass in the form of a perpendicular triple graduated drum. It had, in lieu of windows, plate glass walls and a perfect air conditioning system. Venetian blinds, shades and curtains of cream silk marquissette achieved some seclusion. The ground floor drum of the house was occupied by a garage, hangar, workshop, laundry, recreation room, and miniature bar. The middle drum housed the living quarters, and the top drum was a solarium surrounded by a circular roof terrace. A central pillar ran through the house from top to bottom supporting its weight and holding plumbing and gas pipes and electric light wires. The living room which opened on an extensive deck terrace was finished in bakelite and all the floors of the middle drum were of walnut blocks. The floor was done in rubber tile and two aquariums full of lively bright-hued fish provided entertainment for the children. Movable wardrobes took the place of closets in the house. The electric kitchen was all stainless metal, porcelain, and glass. Lights could be dimmed or brightened by the turning of knobs in the stairwell.

The "Florida Tropical House" was the third in the trio of luxury houses. It was the sort of house designed for a climate that invites the outdoors to come inside. Entrance was direct into a spacious two-story living room with white walls, a great deal of cool blue in the decorating, a balcony, a ceiling-high studio window and metal furniture. A shining aluminum open stairway leading to the upper floor added to the beauty of the room. Aluminum panels opened into a bar served from the butler's pantry. On the other side was a tile-paved loggia. There were two bedrooms on the ground floor and a bath room with a sunken tub and glass spray shields. The entire roof, except for the space occupied by the tall room, was a sun, living and recreation deck.

The Glass Block house was not a residence, but was erected to demonstrate the building possibilities of glass blocks. The walls were of one thickness of blocks and were unsupported by frame, but the fifty-foot tower had a steel core. The building ran the whole gamut of color, from pale yellow of the tower to deep violet at the rear.

The Johns-Manville house was built of materials designed to exhibit sound-proofing, heat-proofing, and similar qualities. But it was planned, constructed, painted, and lighted to focus on a mural painted on an asbestos wall. The entire building was illuminated by reflected light.

American Radiator constructed two buildings and six kiosks to show the stories of heating, and air-conditioning, sanitation and plumbing, and bathroom layouts.

The Crane Company highlighted its building with a 45 foot shower bath. Here was a unique display of antique and historical plumbing fixtures. Com-

plete exhibits were made of installations for the rural home, a modern kitchen and the heating and air conditioning of a family house.

The Good Housekeeping Pavilion was the scene of a spacious, beautifully furnished living room, with a terraced, classical garden. To illustrate the use of pottery as decoration Haeger Potteries had a plant making pottery and a group of southwestern Indian potters at work.

Johns-Manville Building featured a complete home re-modeling exhibit showing the uses of asbestos, and all stages of its manufacture. The Kohler Building added the story of kitchen equipment and labor saving devices.

Penland Weavers put a Carolina mountain cabin on a wagon behind a pair of mules and drove it to the Fair, where their mountaineers made homespun, rugs, coverlets, pottery and pewter.

The Electrical Group

The electrical group was a three-unit structure designed by Raymond Hood. Its exhibits epitomized the story of electrical progress and communication. The Electrical Court was illuminated at night by seven towering cascades of blue gaseous tubing—symbolizing the source of hydro-electric power. Beams from a battery of search-lights on the roof met and crossed over the electric fountain in the center of the Court.

In Western Union Hall a number of devices were demonstrated for transmitting communications by wire which have since become commonplace, such as the electric teletypewriter and the multiplex sending and receiving unit whereby a number of messages may be sent simultaneously over a single wire. A method of synchronizing numerous clocks from a single master one, and a stock market ticker were others.

Radio Corporation of America presented extensive exhibits of radio products including a radio tube manufacturing plant, a record pressing plant, a color organ wherein music was translated into colors and two theatres.

The Westinghouse Company had exhibits of heavy-duty electrical machinery, domestic appliances, a "Playground of Science", and a heroic-size robot capable of many movements and controlled entirely by the voice.

General Electric Company had an extensive exhibit of electrical appliances and electrical machinery, but their outstanding attraction was the "House of Magic", a stage show in which the latest developments in electrical and allied sciences were demonstrated. Despite the fact that shows were run practically continuously through the day, long queues were always waiting for the next performance.

The Illinois Bell Telephone Company demonstrated the intricacies of voice communication by wire, including many discoveries in the basic sciences by the Bell Laboratories.

Practically every phase of the electrical industry was demonstrated in the numerous other exhibits located in the great halls. Testing devices such as the cathode ray oscillograph, air conditioning equipment, an all-electric kitchen,

the development of lighting from age-old stone lamps to the gaseous tubes, the use of storage batteries, various means of transportation, and cut-away and operating models of various types of electrical machinery.

From Wagons to Wings

The century celebrated by a A Century of Progress had encompassed the spanning of the continent by the railroads, the chugging into existence of the automobile, and travel from sun to sun by airplane. Surrounding the pageant presenting this story vividly on a huge outdoor stage were grouped the building and outdoor exhibits of the travel and transport area. The "T and T" Building housed the first Pullman and the aluminum, stream-lined marvel of 1933. A Rocky Mountain stage coach, a Conestoga wagon, an early high-wheeled automobile, and an original Curtiss box-kite pusher plane reminded the visitor of the evolution and mastery of transportation. Here, too, were the beginnings of a new type of exhibit—a glass automobile to show the machine in action, a chassis cut away to show motor car lubrication, and a working oil well.

On the tracks outside stood the Union Pacific's first streamliner, the English Royal Scot, the Baltimore & Ohio's Capitol Limited, the presidential train of the Mexican Republic carrying the famous Monte Alban jewels, and many types of United States railroad equipment—mail cars, refrigerator cars, mine rescue cars, locomotives and signal equipment. A glass-towered parking place brought Nash cars up and down all day long.

Industry in Fascinating Phases

Devoted entirely to industries, the general exhibits area was dominated by the five pavilions of the Exposition's General Exhibits Building. In the first, the step-by-step process of making steel and the story of oil were told. The second was given over to graphic arts. Miniature and life-sized models worked to demonstrate the extensive and intricate problems of printing, engraving, and paper making. The unique reproduction of the Gutenberg press was on display, while in the foundry, type was cast to print reproductions of pages from the famous Gutenberg Bible—sponsored by The Cuneo Press.

The third pavilion was devoted to the development of business efficiency—the modern machines that replaced the grocery "till", teletypes and other mechanical wizards that have made man's working hours shorter, even if more complex.

The fourth contained a spectacular display of international diamond industries, with a diamond mine in operation. An assembly line turned out small packages of toothpaste, while over in the last pavilion one could watch shirts made and hosiery woven.

Special Exhibit Buildings

A number of exhibitors built special buildings, some of which, with their exhibits, were worth several million dollars apiece. The GENERAL MOTORS

BUILDING, four hundred and twenty-nine feet long and three hundred and six feet wide and dominated by a one hundred and seventy-seven-foot tower required eleven hundred piles to be driven to provide the foundation. The center of interest was the automobile assembly line which could be viewed from a balcony a fifth of a mile long accommodating a thousand visitors at a time. Two hundred skilled workmen assembled the cars. A steel chassis started at one end of the line; engines, transmission and wiring were deftly attached. Cranes swung the body into place and the cars were driven off under their own power. In the Hall of Progress the methods and implements used by the scientists and engineers of the Corporation's research laboratory were shown, together with many of the machines and devices used in testing the component parts of the automobile and the materials from which it was fabricated.

The **FORD BUILDING** drew attention by its dome, two hundred feet in diameter, which represented the giant cogs of a gear wheel. Here was housed a museum of transportation with sixty-seven vehicles showing development from the Egyptian chariot to the modern motor car. Henry Ford's first work shop was transported bodily to the museum, as was his first automobile, built in 1896. The Industrial Hall, five hundred and eighty-five feet long by two hundred and thirty-five feet wide, told the story of the raw materials required to produce an automobile. Copper, iron, zinc, aluminum, rubber, cotton and wool were carried through the actual stages of manufacture to the finished part of the motor car.

Across from the Ford Building, on the Lakefront, were the beautiful Ford Gardens. Here was the "Roads of the World", reproducing in nineteen separate sections examples of world-famous highways from the earliest Roman and Chinese roads to the smoothly paved highways of today. Daily concerts by the Detroit Symphony Orchestra of seventy pieces were given in the gardens.

The **CHRYSLER BUILDING** was in the form of a Maltese Cross with four pylons one hundred and twenty-five feet high and an open center well. A huge drop forge hammer shaped steering knuckles from red hot billets. In demonstration of actual operations, welding was performed, cloth woven, safety glass made, coil springs wound, and lacquer shown in process of production. The effect of air resistance on different shapes of cars was demonstrated in a wind tunnel. On an exhibition track a demonstration of automobile driving and testing was given under the direction of Barney Oldfield by his corps of "Hell Drivers". Before the amazed eyes of the spectators a car driven at high speed would be swept sidewise into a sand pit. With an explosion of sand it would roll on its side, top, and back on its wheels and then, under its own power, drive up to the grandstand where a smiling driver got out and bowed to his astonished audience. Any words as to the ability of the car to take severe punishment would have been superfluous.

The **FIRESTONE BUILDING** featured the most modern type of automobile tire factory in full operation, turning out complete tires ready for use. Beginning with bales of crude rubber received from the Firestone plantations in Liberia,

the crude rubber was masticated in mixing machines to which was added the additional ingredients needed for tire rubber. The "gum dipping" process by which the tire cords were impregnated and the methods of coating the cords under pressure in a calendering machine were then shown. The component parts were assembled, placed in the vulcanizer from which the finished tire emerged ready for inspection and wrapping. In the adjacent Firestone garden were singing fountains, wherein the streams of water were made to synchronize with the rhythms of music, an ingenious and relaxing diversion.

The SEARS ROEBUCK BUILDING greeted the visitor as he entered the grounds from the North. It was dedicated to the comfort and convenience of the visitors, and the company received many letters of commendation in the years that followed for the many courtesies which their guests received. The exhibits included a mysterious "talking robot", an animated map of the United States, demonstrations of laboratory inspections, a series of historic dioramas showing the progress of merchandising from the Indian trading post to the modern department store, and a home wood-working shop.

The SINCLAIR EXHIBIT turned back the pages of time with giant prehistoric monsters to indicate the connection between the age of dinosaurs and the origin of oil deposits. Here on a brown stone hillside a forty-ton brontosaurus swung its long neck, jerked its huge tail, clashed its jaws and emitted life-like screeching grunts. In a pool a glaring-eyed trachodon splashed with his huge clawed foot as he watched a fight between a three-horned triceratops and a tyrannosaurus, the most ferocious creature that ever lived, with crocodile jaws and hind legs like those of a kangaroo. Near them a stegasaurus browsed on prehistoric vegetation. The animation of these huge creatures was most realistic and many a squeal was heard from startled visitors.

Within the curve of the 23rd Street bridge SWIFT constructed an open-air auditorium with a seating capacity of seventeen hundred. Separated by an expanse of water was the stage where the Chicago Symphony Orchestra with Frederick A. Stock and other nationally-known conductors presented two concerts daily. On both sides of the auditorium were exhibit halls containing institutional displays of Swift products and puppet shows telling the stories of their production.

Conclusion

This chapter has touched but briefly a few of the many industrial exhibits on display in the Fair. To record them in the detail which they merit would require several volumes. One visitor who had no official connection with the Fair and who spent a full three hundred days there during the two years was shown several motion pictures of fair exhibits some months later. Her frequent comment during the showing of the pictures was:

"Where was that? I never saw it."

Another visitor with an unusually meticulous mind spent his entire two weeks'

vacation in one building, and, when asked why he had missed other attractions, commented:

"I didn't have the opportunity to see thoroughly and understand all the things in that building, and I felt that it was much more important to do the one building well than to get a smattering of many."

Certainly, by whatever method a visitor surveyed the endless array of exhibits covering almost every field of human endeavor, he was well repaid for his time, for here, in the most assimilable form that many minds could devise were the stories of the products and methods of American industry.

SOCIAL SCIENCE EXHIBITS

Mind and mechanics are always inextricably interwoven. The connection between the scientist and the sociologist is a close one. Early planning by A Century of Progress foresaw that depicting the application of science to industry would be incomplete did it not also envision the effects of these scientific and industrial changes not only upon the material life of man, but upon his social existence—even upon the inner life of man himself.

The first link between the basic and social sciences was forged when the National Research Council formed a division of Anthropology and Psychology. The sub-committee on anthropology eventually became the basis of the Social Science Division. This was entirely logical, for anthropology is on the dividing line between the basic and the social sciences.

The original plan provided for showing the various culture areas of aboriginal America with the typical Indian tribes of each region. The Eskimos, living as closely as possible under the conditions of the far north were to be shown carrying on their regular arts and crafts in order that the visitors to the Fair might have a faithful picture of that culture. In contrast to them, a group of Indians would be brought from the northwest coast, with their great plank houses and totem poles, and other evidences of a life radically different from that of the Eskimos. Next would come the Indians of California who lived almost entirely on wild acorns and seeds, dwelt in houses of brush and made extensive use of baskets instead of pottery. Following them would be the Indians of the Plains, the buffalo hunters who lived in skin tepees and led a nomadic existence. The Indians of the woodlands were to form the next unit—a people

living in wigwams, carrying on a limited agriculture. Then would appear the picturesque Pueblos of the southwest in their terraced houses of adobe and stone, practising an extensive agriculture, making pottery and weaving blankets.

Finally the whole exhibit was to culminate in a reproduction of a Mayan temple, standing on the top of a high terrace or pyramid. Within this structure were to be exhibits showing the ancient, high civilization of Middle America.

The Fair obtained the interest of the Institute of Middle American Research at Tulane University, and it was decided to reproduce the stately and highly colorful Monjas, or Nunnery at Uxmal in Yucatan, as the culminating feature of an anthropological exhibit. The director of the Institute, with a group of architects, modelers and casters, spent several months in Yucatan gathering data and preparing casts and models, which resulted in the reproduction further described in the chapter devoted to building construction.

In the meantime it became clear to the officials of the Fair that all these romantic and vivid reproductions of the past, together with the recent achievement in the various fields of science would remain incomplete unless account was taken of their social consequences and implications. Acting upon the advice of the National Research Council, the Social Science Research Council was invited to appoint a committee to give aid in the plans.

It was true in the field of Social Science as in many other projects of A Century of Progress, that though things did not always work as planned, they usually worked someway, somehow, somewhere. Many more ideas developed than materialized, but many of them came to a brilliant completion.

The Epic of America, though progressing satisfactorily for some time gave way eventually to the rich national days made vivid by pageants, choruses, and dances, and to the Foreign Villages, wherein their home life was so delightfully and accurately portrayed; the children's playground became a separate unit known as the Enchanted Island in which practically all the original ideas of the Social Science Division were carried out; the plans for host facilities, information centers, traveler's aid were carried out sometimes by A Century of Progress itself and sometimes in cooperation with outside organizations; part of the health program which had been envisaged by the Social Science Division was admirably displayed in the medical section in the Hall of Science.

The Hall of Religion, included in early plans, became eventually independent of the Social Science Division and operated under the direction of The Committee on Progress through Religion, appointed by A Century of Progress. Church groups, foreign and home missionary societies, allied organizations, and commercial groups dealing in ecclesiastical supplies were all willing to assist. The Committee on Religion had already decided on a building of its own and approval was given for a special building to be erected near the 23rd Street entrance north of the Midway. Standing on a curve of the shore line, it commanded a beautiful view of the Lagoon and included many exhibits and a series of murals representing Christianity, Buddhism, Confucianism, Moham-

medanism, Judaism, the early American Indian's worship of the Great Spirit, and the ancient Persian and Greek Faiths.

The Social Science Division faced two major problems. The first was the form of exhibits. In common with the policy of the Fair it realized that all exhibits must tell a story; that the story as a rule was more effectively told by dynamic exhibits, stressing either action, color, or sound; that these exhibits must be so conceived and constructed that their meaning could be readily grasped by a public not familiar with the scientific aspect, and that they must also add to the general decorative effect of the Hall in which they are displayed. It is comparatively easy to plan and design such exhibits when they illustrate material things. Some of the social science exhibits fell easily into this group, but others dropped with a dull thud into the questionable and difficult problem of the intangibles. Long study, careful and numerous trial by exhibit makers, plus patient effort resulted at last in a series of exhibits before which people of all kinds and ages stopped and read part of the story of human needs and advances.

The second problem was that of funds. Because of the very nature of its exhibits, this division was not able, except in rare cases, to draw upon industry for its support, and social organizations, educational institutions and economic foundations were already hard put by the depression. The hope of help from these sources died slowly and hard. And the Social Science Division found itself in the same position as other divisions, obliged to change its plans and to put on as good a show as possible with the funds at its disposal.

The Fair turned over the building originally intended for radio to the Social Science Division, to house the anthropological and archaeological exhibits. The building was situated directly across the Lagoon from the Hall of Science, and it was fitting that these two buildings should be joined by the bridge. The location, also, was adjacent to that of the Federal and State Buildings in which were many exhibits allied to those of the Social Sciences.

Changes in Family Life Depicted

The central theme of the social science exhibits was the changing condition of the family in the last one hundred years as the result of scientific discovery. The family as the smallest social unit is swayed by all the forces of politics, law, and economics, is in the experience of all people and had in the last one hundred years been undergoing a radical change. A century ago the family in rural districts and small towns produced almost everything it used. It did not need much money for it was able to exchange for those articles which it could not produce. The children received much of their education in the home, and as the apprenticeship system was still being used, were trained in trades and even in some professions either in the home or in the shop or office of someone in the community. Today the family no longer produces what it needs. Much of the social life is outside the home and in various centers.

Not only the educational exhibits showed these changes, but the sociological exhibits. The social work exhibits through the efforts of a Chicago committee

working with the Public Welfare Department of the State of Illinois put on a cooperative exhibit in which over ninety social work agencies took part, showing its material, not by agency or organization names, but by subjects. Child welfare, the care of dependents, delinquents, and defectives, recreational work, occupational therapy, and many allied subjects were demonstrated in one of the most complete presentations of social work ever placed before the public.

Educational projects were presented by colleges, secondary schools, the public schools, the United States Bureau of Education, and by the Phi Delta Kappa and the Educational Exhibit Committee for A Century of Progress. Through the use of dioramas, advances in the educational field were shown. A century of curriculum contrast was presented and other phases of the educational movement. Allied to these was the Creative Arts of Childhood, the spontaneous art work of orphan children. A school book publishing company added to the treasures with old and rare textbooks and models of primitive and modern schools.

An exhibit by the Department of Anthropology of Harvard may help prove that through succeeding generations of native born Americans, America may be producing a race of its own. This conclusion may be the outcome of the work done at the Fair by the Anthropometric Laboratory for the Measurements of men. All willing visitors, and there were many, were measured. The number of tests made and the outcome were surprising to the scientists themselves.

Archaeology added much to the dramatic effects in this hall. On the first floor an exhibit that always drew crowds and caused much comment was the cross section of a city dump. Everyone has wondered how archaeologists have been able to tell so much about the lives of dead and all but forgotten people, by digging in ruins of old cities. This dump illustrated the technique, for here were to be found articles buried in the dump for the last forty years. In 1893 people threw away kerosene lamps, parts of old style bicycles, Deadwood Dick novels, rats that women wore in their hair and countless other objects long forgotten. A thousand years from now, some archaeologist, digging in such a ruin will know that in the latter part of the nineteenth century people burned kerosene lamps, rode bicycles and women wore rats in their hair.

Next to this was an exact reproduction of an Indian mound in southern Illinois. Half excavated, it showed the skeletons in place with the artifacts that had been buried with them. Three different races that made this part of the country their home in different ages were shown with their varying types of burial. Nearby was the model of an old European cave where people lived thousands upon thousands of years ago. Primitive tools and other artifacts formed another distinguished exhibit.

High color and drama characterized the showing of the Oriental Institute of the University of Chicago. Maps and materials from the "Fertile Crescent," curious little stone Sumarian images, the oldest sculpture in the world and a wealth of Egyptian treasures and models. These proved to be of as much interest to the crowd as to the scholar.

Outdoor Exhibits

When *A Century of Progress* opened its doors in May 1933, the Social Science Division found itself in charge of six different groups of exhibits, two of which were indoors and four out of doors. In addition to those in the Social Science Building, there was a Maya Temple at 31st Street housing a wealth of exhibits. The temple itself stood on a rise of ground, dominating the landscape. Leading up to it from the lower ground was the immense stairway like the original, except for the fact that the treads were wider and the risers shorter. Originally it was built for the barefooted, but modern man with extremities cased in today's foot wear could not easily ascend such a stairway.

It was especially appropriate that this bright temple of jade green and tawny gold with its gorgeous decorations of fantastic highly colored masks should come to *A Century of Progress*. The principal element of the sculpture which formed the elaborate facade was the serpent mask, a representation of Kukulcan, the plumed serpent god. Within the temple was an array of exhibits, some of rare value, others telling by pictures the life of those days.

Of the out-door exhibits the most important was the Indian Village. As Exposition funds were not available, it was decided that if satisfactory arrangements could be made with an exhibitor for an Indian Village which would show sharply contrasting groups of Indians, he would be allowed to construct a stadium or Indian Theater in which dances and ceremonials might be held and an admission fee charged, and conduct an Indian Trading Post where authentic Indian goods would be displayed and sold. The general oversight of this village was to remain with the Social Science Division. Arrangements were concluded with interested Chicagoans. The village, its groups and its works and amusements carried out much as anticipated in the first planning. The grounds of the Indian Village covered three and one third acres and were typical of the regions and groups represented, showing contrasting character of American Indian cultures. At the north end of the grounds were Alaskan totem poles, loaned by the Field Museum of Natural History, and a typical board house of the Northwest Coast Indians. Adjacent to them were the Winnebago Indians with their dome shaped wigwams, representing the Woodland tribes. Just south was a camp circle of Sioux Indians, the warriors and buffalo hunters of the plains, living, as had been planned, in their skin covered tepees. Across the roadway mud covered hogans housed the semi-nomadic Navajos of the southwest, while adjacent to them was the terraced house of the Hopi or Pueblo Indians of Arizona.

In the midst of this settlement stood the old-time Trading Post, from which the various Indian groups were rationed and in which typical Indian goods were sold. In the northwest corner of the grounds a stadium or Indian Theater was built in which Indian dances and ceremonials were held during the day and evening. A total of one hundred and ninety two Indians representing six tribes lived in this village throughout the period of the first Fair, and they, with their dances

and ceremonials, furnished one of the most comprehensive Indian exhibits ever held in the United States.

The early planning of the Social Science exhibits was made by Dr. Howard W. Odum. The assembling, construction and operation fell to Dr. Fay-Cooper Cole and Miss Helen Bennett. They had to make bricks without straw, and only their full measure of devotion to the project made it possible. Working under severe handicaps and with limited funds, by their personal efforts, they assembled the most outstanding exhibit of the subject made up to that time, and probably since.

FEDERAL, STATE, AND FOREIGN EXHIBITS

Federal Participation

Official recognition by the Federal Government was essential to the status of a World's Fair and was a necessary prelude to invitations to foreign governments to participate. The Exposition neither desired nor received any subsidy from the United States. Federal participation was on the same basis as that of other important exhibitors, constructing its building and exhibits at its own expense and paying the standard rental for space occupied in other buildings.

The contributions of the Federal Government to the success of the Exposition were many and varied. The Federal Building presented an imposing appearance and its beautifully executed exhibits told the dramatic story of the multitudinous operations of the republic. Elaborate receptions were provided for the entertainment of official visitors and other distinguished guests. The Commissioners and their staffs were loyal supporters of all phases of the Exposition's activities and were unstinting in their service to its welfare.

Charles G. Dawes, who was then vice-president of the United States, submitted to Congress in 1928 the Fair's proposal that Congress should invite the participation of foreign nations in an international exposition to be held in Chicago in 1933. The announcement that no financial support would be requested through Congressional action was received with surprise and, in some Congressional quarters, with incredulity. The necessary legislation was adopted and approved by President Hoover on February 5, 1929.

"RESOLVED BY THE SENATE AND HOUSE OF REPRESENTATIVES
OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED

that whenever it shall be shown to the satisfaction of the President that a sum of not less than \$5,000,000 has been raised and is available to the Chicago World's Fair Centennial Celebration corporation for the purpose of a world's fair to be held in the City of Chicago, in the State of Illinois in the year 1933, to celebrate the one hundredth anniversary of the incorporation of Chicago as a municipality, the President is authorized and requested, by proclamation or in such other manner as he may deem proper, to invite participation of the nations of the world in the celebration.

"Sec. 2. That all articles which shall be imported from foreign countries for the purpose of exhibition at said celebration shall be admitted free of duty, customs fees or charges, under such regulations as the Secretary of the Treasury shall prescribe. * * *

"Sec. 3. That the Government of the United States is not by this resolution obligated to any expense in the connection with the holding of such world's fair, and is not hereafter to be so obligated, other than for suitable representation thereat."

The invitation by the United States to foreign governments to exhibit in the Fair, and the acceptance by Congress and the President of Section 3 of the proposal, ensured the presence of the United States government as one of the principal exhibitors of the Fair. The necessary legislation for such participation was in the form of a resolution which was approved by President Hoover on February 8, 1932. It provided for the participation of the Federal Government in A Century of Progress (the name of the Exposition had been changed by that time), authorized an appropriation of \$1,000,000 for this purpose, part of which might be expended in the erection of a Government building, and appointed a commission to consist of the Secretary of State, the Secretary of Agriculture, and the Secretary of Commerce to represent the United States. It authorized the President to appoint a Commissioner to A Century of Progress for the purpose of more effectively carrying out the provisions of the resolution.

Thus the United States Government became one of the largest and most cooperative of the Exposition's exhibitors. All its departments, State, Treasury, Navy, Army, Agriculture, Post Office, Interior, Justice, Commerce and Labor, installed edifying and skillfully arranged exhibits, with trained men and women detailed to serve as guides and demonstrators. In addition to these ten departments, eight major Federal establishments cooperated with interesting displays: the Government Printing Office, Library of Congress, National Advisory Committee for Aeronautics, National Capitol Park and Planning Commission, the Panama Canal, United States Shipping Board, Smithsonian Institute, and the Veterans Administration.

The Federal Building occupied a commanding site on the east bank of the North Lagoon. With the unique States Building it formed a triangular Court of States. The Federal Building itself formed the base of the triangle. Around its golden dome were three 150 foot towers triangular in section, representing the three branches of government, executive, legislative, and judicial. In addition

to those in the Federal building, the United States government exhibited or loaned material for exhibits in The Hall of Science, the Hall of Social Science, the Agriculture Building, and the Travel and Transport Building.

X The United States Commissioner for the Fair was Harry S. New, former United States Senator from Indiana and United States Postmaster General. Colonel William B. Causey, was appointed Assistant Commissioner. Both these officials supervised the erection of the Federal Building and the installation of its exhibits. Mr. New resigned his commission just before the opening of the 1934 Fair and President Roosevelt named Edward F. Dunne, former mayor of Chicago and former Governor of Illinois, as his successor. He was ably assisted by his daughter, Mrs. Arthur T. Leonard.

When it was decided that a A Century of Progress should continue in 1934 one of the first questions to be resolved was action by the Federal Government. Thirty days before the close of the 1933 Fair, assurances were received from the President of the United States during his visit to the Fair on October 2, that he would recommend a continuation of the Federal Exhibit, should an exposition be held in 1934. He later wrote: "There seems to be a very considerable demand that you reopen next spring, and since there is every reason to believe that there are many, many thousands who were unable to afford the trip to Chicago this year, but hope to be in a better position next summer, I am rather inclined to agree that it might prove a very fine thing, if the opportunity is still open. I can assure you that I will recommend to Congress that an appropriation be made sufficient to maintain the Government buildings and exhibits there."

Delay in the passage of an enabling act by the Illinois legislature prevented action on the continuance of the federal exhibit until near the end of March. At that time the President sent to Congress a special message commending to its favorable consideration the recommendation of the "Chicago World's Fair Centennial Commission," consisting of Cordell Hull, Secretary of State, Henry A. Wallace, Secretary of Agriculture, and Daniel G. Roper, Secretary of Commerce, that the Government exhibit be continued and an appropriation of \$405,000 together with the unexpended balance of the appropriation for the Federal exhibit in the 1934 Fair be made.

X The President's message together with the suggested draft legislation was referred in the Senate to the Committee on Commerce of which Senator Hubert D. Stephens of Mississippi was chairman, and in the House to the Committee on the Library of which Representative Kent E. Keller of Illinois was chairman. Action was taken speedily by the Senate, the Commerce Committee reporting the legislation favorably the day following the receipt of the President's message. Senator James Hamilton Lewis of Illinois, who had evinced a strong interest in the Fair, called the bill up and it was passed by the Senate without a dissenting vote.

But in the Lower House, matters were different, for indications of an intention to delay action were shown at an early date. The legislation, however, drew the warm support of Speaker Henry T. Rainey, a member of the House from Illinois

and Representatives Britten, Kocialkowski and Moynihan of the Illinois delegation.

It was indicated that some of the opposition to the continuance of the Government's exhibit was due to the fact that certain politicians had been unable to influence the employment department of the Fair in obtaining positions for their followers. There were, however, many of the representatives who defended the Exposition's policy of keeping itself free from political entanglements. The bill was approved on May 21, five days before the opening of the Fair, but it was not until June 19 that legislation was enacted making money available for the continuance of the Federal exhibit. The unexpended balance from the previous year amounting to approximately \$120,000 had permitted winterizing of the Federal building, its refurbishing for 1934, and its opening on time.

This was a season of delays in connection with the Governmental activities. It was necessary to pass a bill providing for the admission of foreign exhibits free of duty unless sold or otherwise disposed of. This measure had been drafted by the Exposition in cooperation with the Collector of Customs in Chicago in the light of experience gained from the administration of customs matters during the 1933 Exposition. Final approval came on May 15, a delay which proved most inconvenient to those shipping from abroad. The cooperation of Anthony Czarnecki, Collector of Customs at Chicago, was always a source of great satisfaction to the Fair. His common sense and enthusiastic assistance solved many perplexing problems.

The cooperation of the Federal Government was valuable and generous in many ways, particularly the assistance given by the Army and the Navy. Both of these services, upon the invitation of A Century of Progress, assigned officers to act as points of contact between them and A Century of Progress. From the early days of the project until the close of the second Exposition competent officers of these services acted as members of the Exposition staff and proved capable and enthusiastic in a variety of ways. They directed the planning and operation of transportation within the Exposition's grounds, managed various concessions operated by A Century of Progress, such as the Sky-Ride, Enchanted Island, Wings of a Century, Fort Dearborn, and the Lama Temple, officiated in the reception and entertainment of guests and in the management of events, helped in the preparation of scientific exhibits, cooperated with the Federal authorities in connection with the collection of customs, and directed the purchasing of supplies and the sale of property remaining after the Exposition.

Those who gave such outstanding performances were Capt. Frank H. Roberts, Lieut. Commander Horace D. Nuber, and Commander John M. Creighton of the Navy; Major C. L. Fordney of the Marine Corps; and Major E. S. J. Irvine of the Corps of Engineers, Captain Morris S. Daniels of the United States Cavalry, and Captain C. W. Ball, Corps of Engineers.

Realizing that the Exposition must be punctilious in observing the formalities and mores of its diplomatic activities, the State Department was requested to designate a man qualified by diplomatic experience to act as Chief of Protocol.

The assignment of Mr. U. Grant Smith, whose long career in the service admirably qualified him for the post, was a happy one for A Century of Progress. His wide experience saved the Fair many embarrassing situations which had befallen other Expositions, and his affable manner and social qualities made the reception of distinguished guests and the arrangement of official ceremonies affairs of universal pleasure and dignified importance.

The Army Camp, under command of Col. Morris M. Keck, provided an interesting spectacle of army life and its many formal ceremonies drew large crowds. Its personnel formed a guard of honor for official guests. These were met at the entrance by a squadron of cavalry and conducted to a review and inspection of three companies of infantry, while the military band played appropriate marches. Their presence on the grounds, together with detachments of sailors and marines, lent an air of impressive dignity.

Participation by the States

Shortly after the Federal Government had signified its intention of participating in the Exposition, the States Division was formed with Col. Christopher Van Deventer as head in January of 1931. His wide experience, broad vision, and high character made themselves felt in every undertaking. Recognizing that the legislatures of thirty states were in biennial session and would not have another meeting before the opening of the Fair, it was decided to move quickly and energetically in bringing the Fair to their attention.

The nation was divided into districts and representatives of the Fair were dispatched to visit each state and present invitations directly to the Governors. Every state was covered on this initial visit, but since there were many instances where repeated calls were required the territorial subdivisions were discontinued after the first round.

In previous expositions there had been an array of individual state buildings, simple or expensive, small or elaborate, according to the tastes and coffers of the respective states. It seemed desirable that there should be a change. For one thing, the ground accommodations of A Century of Progress did not lend themselves to the erection and landscaping of a large number of separate buildings; for another, times were hard and money scarce, and it seemed probable that if A Century of Progress was to have a state representation there would have to be an arrangement whereby the states could enter at a lesser cost than had been possible at former fairs. Hence one of the first policies established was that there would be a single state building around a court of states. One group building consisting of individual and distinct units with separate entrances would permit the development of each exhibit as a completely independent unit. This arrangement would permit housing all states under one roof and adjacent to the United States Government building and so symbolize the unity of the Federal and State governments. The plan proved economical and attractive, although it was unique in design and policy.

In order to eliminate repetition and to make the exhibits wide in their appeal, each state was asked to feature a few selective subjects to be strongly emphasized

and dramatized and not to attempt to show all the details and varieties of its products and attractions. It was proposed to show primarily the undeveloped natural resources which would attract investors and home-seekers and the scenic, historical and recreational subjects of interest to tourists and visitors. The chief objective, as in all the exhibit buildings of the Fair, was to avoid duplication and repetition and to offer variety and originality in design and execution.

Following the invitations, efforts were next made to secure the appointments of state commissions that would investigate and report on definite plans for making an attractive exhibit at a minimum cost with maximum efficiency and popular appeal.

The States Building was originally designed for twenty eight States but enthusiasm was running high throughout the country for the Fair, and so many states and territories believed confidently that they could get the necessary funds in one way or another that it was decided to provide for forty-two, and the plans were changed accordingly. Before construction was started, it was found necessary to reduce the size of the building to thirty-two units to economize ground space and to provide for the east tower of the Sky Ride.

The plans for state participation were seriously affected by the election upset of 1932, as complete changes were made in many states both in the chief executives and in the members of the legislatures. In March 1933 more trouble came through the bank moratorium which affected state funds held in banks and was the last blow to several states' participation. While some states were cancelling contracts the states of Washington, South Dakota, West Virginia, Texas and Iowa acted favorably; and Michigan, Wisconsin, and Minnesota substantially increased their original appropriations. At one time all thirty two spaces were reserved, but when the Fair opened in 1933, only twenty-one states and territories were present in the States Building.

Illinois as the host state was most generous in its support. The legislature made a liberal appropriation and it was wisely administered by a distinguished commission. The gracious hospitality of the Illinois Host House and the cordial reception extended to all visitors by the ladies in attendance won many warm friends for the State.

An incident, both tragic and amusing, merits relating. The State of New York laid out an inviting section of Adirondack Park. It was to be as realistic as possible so many trees and shrubs were brought from their native habitat and planted in their new home. There were alluring paths and a babbling stream teeming with brook trout. As the final touch of authenticity several car loads of the actual ground covering was brought all the way from the Empire state. It included moss, rotten logs and branches, the dry leaves, pine needles and humus which carpet the ground under a dense forest. But it arrived just before the Fair opened and was piled near the site, awaiting the careful spreading by the expert.

The night before the Fair opened, there came the order for the grand clean-up. Scores of trucks were marshalled and directed to pick up everything that might

mar the finished appearance of the ground on opening morning. They did the work all too well, for when the sun rose, there, in the dump piled high with broken packing cases and the rubbish and litter of a last house cleaning—was the coating of the Adirondack garden.

All states were invited to select official State days to be celebrated at the Exposition and in most cases historic dates were chosen. Governors issued official proclamations calling their people to cooperate with the state commissions and the Exposition to make the celebrations memorable. The press publicized the event locally and the transportation companies offered special low rates resulting in greatly increased travel and attendance.

Programs were arranged for each state day by the Special Events Division. Military exercises, parades and pageantry were among the attractive features of these programs and many states used these occasions for dedication of the state exhibits with appropriate ceremony and programs of speaking and entertainment. Many famous state bands and local organizations joined in these celebrations, which generally took place in the Court of States.

When the governor of the state was in attendance, special military honors were accorded the official party. They included the military salute of nineteen guns, cavalry escort from the 14th Street gate, through the Court of Honor and the Avenue of Flags with a review of the troops from the steps of the Administration Building, and an informal reception by President Dawes and presentation of the commemorative medal.

The second-year record of the Hall of States furnished further and convincing evidence of the popularity of the group plan building.

Some months before the opening in 1934, the Exposition anticipated a shortage of state exhibits because there had been few regular sessions of the legislatures during the previous year. However, the state exhibits in 1934 were either privately financed or maintained by balances left over from the previous year's appropriations, and the response was so much greater than had been expected that it was necessary to send official notice to all states that had not yet contracted for locations to the effect that no more space was available in the States Building.

Florida added in 1934 to its original exhibit a tropical garden under a conservatory roof, creating an atmosphere of the southland and a practical demonstration of its charm and lure for tourists and permanent residents.

Arizona, New Mexico, Puerto Rico and the Virgin Islands were among the new exhibits of the second Fair. California, Washington, Georgia, Ohio, South Dakota, Missouri, West Virginia and Illinois were among those which repeated their 1933 exhibits with added features and improved methods of display and operation.

In one state exhibit where sales were permitted and limited to a few typical products of the state, the receipts reached a total of more than \$100,000 during 1934. In another state exhibit the sale of a single article of commerce in which the state excels was sufficient to carry the major cost of the entire exhibit for the two years.



Quiet Spot in Horticultural Garden.

Scenes from the Villages.





Skating at Black Forest.

Villages from over the World.



Most states, including Missouri, Ohio, Georgia and Illinois, did not permit sales, relying on intangible returns. Such returns were easily traced because of increased interest in tourist travel, the sale of lands and undeveloped resources and in many cases the establishment of new industries.

The far west of the mountains, the eastern land of the sea, the middle west of the prairies, the south of the balmy air and the north of the cold snows all sent their messengers to the Fair. They came and spread out their wares in the long building that stretched to the east from the Federal Building, linked in reality as they were in spirit—one people—one Union.

Foreign Participation

High hope of foreign representation—with exotic exhibits, learning brought from far off lands and old world buildings reproduced on the shores of Lake Michigan—loomed large in the early plans of A Century of Progress.

The story is not told in the difficulties encountered, the disappointments met, the dwindling hope that early plans might materialize, but rather in the development of the substitutes which made gay the Fair grounds, brought foreign groups together and etched pictures of old world countries on the landscape of the Fair.

Foreign participation was one of the earliest phases of organization activities to receive attention. Long before Congress enacted legislation for federal cooperation in the Fair and for conferring authority on the President of the United States to invite other nations to participate in the Exposition, a Century of Progress was laying plans for representation from abroad. The management realized however that unfavorable economic conditions in many parts of the world were not conducive to robust optimism. There was scarcely an important nation that was not encountering difficulty in balancing its budget and restoring its economy to normal after the shock of World War I. Parliamentary bodies could hardly be expected to authorize expenditures not urgently required for domestic welfare.

In the fall of 1930 a group of Exposition officials toured Europe for the purpose of making contacts that might lead eventually to favorable consideration by the countries visited. It also presented the opportunity of visiting some of the Fairs which at that time were being held on the continent and in England, and learning something of their organization, buildings, exhibit forms and other matters connected with successful expositions. Although it had been determined by that time to build this American Fair around a new idea which would necessitate many changes from the old formulas, it was also realized that much could be learned from experienced people in countries that were exposition minded.

In September of that same year the Fair established a London office with Sir Henry Cole in charge. The purpose of this office was to map out a campaign for European participation in the Fair and to supply explanatory literature to European government officials, chambers of commerce, railroads, steamship

agencies, newspapers and magazines. One of the first duties of the London office was to obtain the consent of the International Convention on Expositions to permit their subscribers to participate in *A Century of Progress*. By agreement among thirty-one nations, this convention had been formed in 1930 for the purpose of bringing into conformity the conditions of official participation in international expositions and of limiting the number and nature of expositions in which subscribers to the Convention could participate. In their preliminary contacts with European governments it soon became apparent that the articles of the Convention were a serious obstacle to the acceptance of the President's invitation as the United States Government was not then a subscriber to the Convention. Negotiations were opened with the headquarters of the Convention in Paris and after a concentrated effort by the London and Paris offices, the Convention agreed in January 1931 to consider *A Century of Progress* as admissible to participation by their subscribers providing the rules and regulations governing foreign participation in *A Century of Progress* had been brought into line with the requirements of the Convention.

The staff of the London office made a careful study of traffic conditions, anticipating considerable shipments from Europe to the United States. This entailed much research and constant contact with the principal shipping lines and freight agents on both sides of the Atlantic, as well as close cooperation with the Transportation Section of the Exposition in Chicago. Negotiations also were undertaken with European freight conferences with the result that advantageous freight rate reductions were obtained for European exhibits. None of this work was wasted, for though the number of countries formally participating was small, many exhibits were sent from foreign countries, especially to the Hall of Science.

Out of their study of European Expositions and their interviews with government officials was drawn up the first concrete plan for the participation of foreign governments. In the face of opposition to the high tariff policy of the United States, it was useless to suggest to foreign countries that an exhibition of their products at the Fair would result in a greatly increased demand for them in America. Handwork and artcraft, impossible to duplicate in industrialized America and luxury articles appealing to a limited group were felt to be the only merchandise for which markets could be created in spite of heavy import duties. An exhibit designed to increase tourist travel would be of real benefit to participating countries. The plan proposed was based on the construction at the Fair of reproductions of medieval buildings, grouped around village squares, each unit to be typical of the architecture of the country represented. The ground floors of each building would be used for exhibit space where governmental activities, exhibits of artcraft and handwork, tourist attractions, displays sponsored by railway and steamship lines could be shown. It was believed that part of the expense involved in such an undertaking could be recovered through the sale of space to tourist agencies and industrial organizations likely to derive benefit from such a project, through the sale of merchandise and the operation of restaurants serving food typical of the countries concerned.

This plan was thought desirable, not only because it seemed to be a workable one, but also because these quaint old world villages would afford an interesting contrast to the extremely modern structures in surrounding areas on the Fair grounds, and an opportunity for comparing the mellow, time-worn architecture of the middle ages with a new architecture which had not yet proved itself.

Numerous objections to the plan were raised by officials of foreign governments. That kind of exhibition, they said, had already been done at recent expositions in Antwerp and Barcelona. Other governments emphasized the fact that in an Exposition purporting to demonstrate the progress made in all lines of endeavor during a century, they would not want to reproduce the old, but rather would desire to show what their own country had accomplished in the last one hundred years. Moreover, they were desirous of showing the latest in science and manufactured goods rather than inferring they were living in a dead past. Lastly there was the expense of making casts of old buildings and reconstructing them in the United States. Belgium alone, and then only unofficially, through the efforts of an individual, constructed a village at A Century of Progress in 1933. It proved to be one of the outstanding successes of the Fair and led to the erection of many others in 1934, all of which were privately financed and operated as concessions.

One other plan was suggested—A Hall of Nations to be erected by the Exposition, similar in structure to the Hall of States, consisting of a series of adjoining pavilions, each with a separate entrance. Some opposition to this scheme was expected as it upset the traditional idea that each nation occupy a building of its own.

In presenting these plans to foreign officials it was made clear that they were merely suggestions and that participating governments were free to organize and present any type of exhibit they saw fit to offer. The Exposition's Rules and Regulations Governing Foreign Participation provided that subject to the limitations of areas available, free ground space would be allotted to foreign governments for the erection of special pavilions.

The Hall of Nations materialized in a modified form when it became evident that covered space would have to be provided for some foreign governments which did not desire to erect pavilions of their own. A section of the Travel and Transport Building was set aside for this purpose and space was rented to four nations and one foreign exhibit sponsored by a private group.

When it became clear that foreign participation would be difficult, the London office was closed and in March 1931 the Foreign Participation Division was set up in the Chicago offices. This Division was greatly assisted by the Chicago Committee on Nationalities, under the leadership of Major Felix Streyckmans, through which it made contact with consulates and foreign colonies in Chicago. This committee, which had been organized in 1928, had already been of assistance in publicizing a Century of Progress through correspondence with connections abroad, through the foreign language press in the United States and through journeys to the native countries of members of the committee. Thirty-four national groups were organized in Chicago with the sanction and support of the

consulates. One of the main functions of this committee was the planning of national celebrations on the Exposition grounds. In addition to drawing large numbers of people to witness these programs which emphasized the international aspect of the Exposition, the various sections of the Committee invited their diplomatic officers in Washington to participate in the festivities and cooperated with the Fair Administration in receiving and entertaining these dignitaries.

One of the most important duties of the Foreign Participation Division was to maintain close contact with the consular corps of Chicago and keep them informed as to the progress of the Exposition as a whole. The consuls gave valuable assistance, for when government officials were approached in the capital of a country, information and reports were required to be submitted by the consuls resident in Chicago before final action was taken as to participation.

From time to time the Fair administration sent special emissaries to visit the capitals of various countries and to seek from government officials participation in A Century of Progress. Some foreign countries were also visited by individuals who offered their services to the Exposition while making trips abroad on business or for pleasure.

That there was a real desire among many countries to exhibit was shown by the governments who accepted the President's invitation but were later forced to withdraw. They included Argentina, Cuba, France, Lithuania, Persia, Roumania, and Turkey. Committees of government officials, industrialists or chambers of commerce were organized to promote participation in Colombia, Great Britain, Hungary, the Netherlands, Poland and Yugoslavia, but could not fulfil their plans.

Brazil accepted in January 1932 and in August 1933, after the Fair had been open for more than two months, took space in the Travel and Transport Building. Sufficient funds were appropriated by the government to install an exhibit in which trade with the United States was stressed and certain products advertised.

Immediately after the close of A Century of Progress in 1933, foreign commissioners accredited to the 1933 Fair were invited to confer with the Fair management with regard to the possible participation by their governments in the Fair of 1934, and to discuss certain changes contemplated in the rules and regulations governing foreign participation.

The changes were directed at defining more specifically than in 1933 the type of sales operations carried on in exhibits sponsored by foreign governments. Under the revised regulations only merchandise imported from abroad and sold directly by the commission appointed by the participating government or by a governmental agency could be sold without a percentage of the gross receipts being retained by the Exposition. Sales of merchandise and restaurants conducted for profit by individual concessionaires in governmental sections were subject to the same rules and regulations that governed other concessionaires on the grounds.

Notable new features in the Italian exhibit were the Venetian glass factory located in a separate building to the north of the main pavilion, and an exhibit of wines in a structure to the south. The Italian government presented to the City of Chicago an antique marble column as a memorial to General Italo Balbo's flight

to the city in 1933. The column in front of the pavilion was dedicated at Italian Day at the Exposition, July 15, the anniversary of the arrival of General Balbo.

Although the government of Czechoslovakia was unable to participate, it made its pavilion available to the Czechoslovakian American Chamber of Commerce under whose auspices it was operated.

The governments of Sweden, Spain and Greece were prohibited from participating in the 1934 Fair under the regulations of the Paris Convention of World's Fairs, but all of them sent exhibits and native handicrafts to be shown by local national organizations or in their respective villages.

The government of Mexico, having taken its train and its Monte Alban jewels home, placed exhibits of art, industry and handicraft in the Mexican village where they found a homelike and characteristic setting.

Because of the number of foreign villages on the grounds in 1934, the Fair presented a more foreign and exotic appearance than it probably would have had if foreign countries had come in in the usual way with large and dignified buildings. Each of these foreign villages was true to type—each contained a number of buildings of characteristic architecture, each had interesting exhibits from the homeland and gave the entertainments known across the seas and served typical native food.

Canada participated by taking a large space on the first floor of the Travel and Transport Building, and installed an exhibit prepared by the government and the Canadian railways, showing the industrial and agricultural development of the country and its attractions for tourists.

The Grand Duchy of Luxembourg occupied a section on the second floor of the Travel and Transport Building with an exhibit of statistical information regarding the iron and steelworks of the country, its banking system and tourist attractions. Shortly before the Fair opened the Irish Free State also took space on the second floor of this building, the exhibits for which were collected by the Minister of Industry and Commerce and the Hibernian Academy.

The Danish foreign office appropriated a substantial sum to procure a collection of Danish scientific and mechanical exhibits for the Hall of Science, which after the Fair were transferred to the Museum of Science and Industry. In addition, Danish linens, silver, and lace were shown in the Travel and Transport Building.

The Dominican Republic constructed a model of the proposed Columbus Memorial Lighthouse, a project sponsored by the Pan-American Union for which ground had already been broken in Santo Domingo.

Egypt constructed a pavilion which displayed art handicraft, tourist attractions and replicas of some of the treasures of the Pharaohs.

The Japanese building was erected to house exhibits procured largely from Japanese commercial organizations by the Japanese Exhibitors' Association, which was of official character. The appropriation from the government was supplemented by funds from this association. In the pavilion were art craft, silk, an exhibit of the pearl and tea industries and various agricultural and industrial products. The South Manchuria Railroad erected a small building adjacent to the

main structure and displayed a relief map and exhibits showing the agricultural and industrial resources of Manchuria.

Costa Rica which had not accepted until May 1933 purchased two areas in the Agricultural Building. In one section was an exhibit of native woods, tortoise shell and other native products. In the other section was a coffee garden where coffee and chocolate were served.

Czechoslovakia built a pavilion in which was placed a display of glassware, china, woodcraft, jewelry, handwork and pictures and printed material to attract tourists. A restaurant was operated in an adjoining building.

Mexico's participation was the unusual exhibit of its presidential train with the celebrated Monte Alban jewels in one coach. Under the charge of officials of the National Railways of Mexico, it attracted enthusiastic praise.

Sailing across the Atlantic, down the St. Lawrence River, through the Great Lakes the training ship "Sordanlet" arrived in Chicago and docked on the Exposition shores on June 20, 1933 bringing Norway's greeting for Norwegian Day.

A project sponsored at first by individuals was later taken over by the Spanish government—a pavilion devoted to displays of tapestries, paintings, sculpture and floor coverings.

Belgium asked that the site set aside for it be placed at the disposal of a Belgian city as the country was unable to assume financial or other responsibility. A corporation was formed which built and operated the Belgian Village as a concession.

Outstanding among the foreign buildings was the Italian pavilion, of modern design and costing 3,000,000 lire. An interesting series of charts showed the progress made in various governmental projects. Transparencies of historic scenes engaged the attention of scholars and tourists and the exhibit of handwork and art craft had wide appeal. Italy also presented an outstanding exhibit in the medical section of the Hall of Science and a second exhibit of old and modern engineering, model airplanes, important inventions of the last century and naval construction. The most spectacular part of Italy's participation was the flight of an armada of seaplanes under the command of General Italo Balbo which flew across the Atlantic from Italy to the Fair Grounds. They were sent by the Italian Government as a gesture of good will and friendship for the United States and the Exposition. The armada flew low over the Exposition grounds for the first time on July 15, while the Fair crowds cheered the doughty fliers after their long air journey. General Balbo and his fliers remained a number of days in Chicago, feted by their friends, by A Century of Progress and greeted with wonder and honor by all who could manage to meet them.

In April 1931, China accepted the invitation to participate, but definite plans were not completed until early in 1933. An appropriation made by the Chinese government was supplemented by funds from the Chamber of Commerce and several Chinese provincial governments. The Chinese Exhibitors Association was organized for the purpose of collecting exhibits which included jade, embroideries, porcelains, lacquer work and wood carving. A compound of typical Chinese buildings was erected which housed the exhibits and a restaurant and theater.

ART EXHIBITS

Art of the Century of Progress was exhibited officially at the Art Institute under the leadership of Mr. Chauncey McCormick. The one thousand borrowed masterpieces were safe within the solid granite and limestone walls that had been built for the purpose of housing art treasures, and had the skilled and unceasing care of experts.

The collection, one of the largest and finest ever gathered together under one roof, was lent by twenty-five museums, two hundred and fifty galleries and private collectors in the United States. One important exception was Whistler's "Portrait of the Artist's Mother" from the Louvre in Paris. In addition to these, many great works of art owned by the Art Institute were shown. The exhibition began with a room devoted to fourteenth, fifteenth and sixteenth century English, French and German paintings, including among others Holbein's "Portrait of Catherine Howard," Jean Clouet's "Charlotte of France" and a remarkable small head by Corneille de Lyon.

There were two Rogier van der Weydens, a Memling "Madonna," a brilliant Jacob Cornelisz van Amsterdam, a Geraerd David, a Lucas van Leyden, and the famous "St. Jerome" by Peter Christus in the collection of Dutch and Flemish paintings.

The works of the early Italians occupied four galleries in which were to be seen such treasures as the Segna di Bonaventura "Madonna Enthroned with Saints and Donor," Sassetta's "Journey of the Magi," "Crucifixion," by Masolino, Giovanni Bellini's "Madonna," and a painting of two Oriental heads by his brother, Gentile. There were three famous Botticelli paintings, "Madonna and Child," "Adoration

with Angels," and a portrait of a young man, supposedly Botticelli himself, and the "Rape of Deianira," by the brilliant Pollaiuolo and Bernard Daddi's "Vision of St. Dominic," and "A Lady Holding a Rabbit," by Piero di Cosimo.

Among the Spanish primitives were the famous Ayala altarpiece dated 1396 and "St. George and the Dragon" by Bernado Martorell.

Sixteenth century painting was superbly represented, with three compositions by Titian, including "Venus and the Lute Player." Others in the section included Tintoretto's "Christ on the Lake of Galilee" and "Rest on the Flight into Egypt" by Veronese. A group of later Italian painters included Tiepolo, Guardi, Canaletto, Magnasco, Mola, Piazzetta, and others.

The great Dutch masters of the time of Rembrandt were grouped in one large gallery where a breath-taking sweep of the room showed Van Dyck's portrait of "Marquesa Polixena Spinola-Guzman de Leganez," the magnificent "Aristotle with the Bust of Homer," by Rembrandt, landscapes of Hobbema and Ruisdael and the superb "Skittle Players" by Pieter de Hooch.

One of the finest collections of Spanish masterpieces featured the Institute's own great masterpiece by El Greco "The Assumption of the Virgin" and his great landscape "View of Toledo" as well as Goya's "Six Episodes in the Capture of the Bandit Margato by the Monk Pedro de Zaldivia," "Boy on a Ram," and "The Bull Fight." There were also five canvases by Ribera, Morales, Zurbaran and other Spanish masters.

Seventeenth and eighteenth century English and French paintings were a delight. English painters of the eighteenth century included four Gainsborough's, among them his "Queen Charlotte of England," Constable's "Stoke-by-Nayland," Reynolds' "The Honorable Mrs. Watson," and others. Raeburn the Scot was represented by several portraits, and examples of Lawrence, Turner, Romney and Bonington were included. French seventeenth century painting was represented by works of Poussin, Claude and the two Le Nains, and the eighteenth century by Boucher, Lancret, and Pater; "The Industrious Mother" by Chardin, David's "Mme. Jeanne de Richemont and Her Son," and the Ingres, "Mlle. Jeanne Gonin."

A large gallery devoted to the pre-Impressionist period in France gave Delacroix's "Spring" and Corot's "View of Volterra," "Jumieges," and "Interrupted Reading." Millet, the Barbizon School and Courbet and Daumier were represented in the same room, Courbet by "Toilette of a Bride," and Daumier by "The Uprising" and "The Drinkers."

Impressionism in France, which had its beginning in the sixties, was represented by some of the finest examples of the painters of the modern French school, bringing the representation well into the twentieth century. It began with Monet's brilliant "Argenteuil" and many excellent examples of the work of Monet and Degas, among the latter's being "Carriage at the Races in Provence," "Race Course: Before the Start," and "Uncle and Niece Cézanne was honored by a one-man group. His "Still Life with a Clock," the vivid "Still Life with Apples," "Road to Auvers" and "The Bathers" graced an impressive array of eighteen of his most renowned paintings.

Of Manet's there was "Jesus Mocked by the Soldiers," "The Music Lesson," the two "Philosophers," the "Boulogne Roadstead". Outstanding Renoir examples were "Luncheon of the Boating Party," "The Moulin de la Galette," the "Bather," "Diana, the Huntress," and "The Two Little Circus Girls". These were followed with such works of Gauguin as "Tahiti Woman with Children," and "We Greet Thee Mary" and with the Seurat "Sunday Afternoon on the Island of Grand Jatte." Matisse and Picasso carried on the story with canvases such as Matisse's "Decorative Composition," "White Plumes," and "Pont St. Michel," and Picasso's "The Woman with a Fan," "Figures" and "The Woman in White."

There was a gallery of distinguished American portraits of the Colonial and Federal periods, works of Copley, Stuart and Ralph Earl, Hesselius, Feke and others. Albert P. Ryder's "Moonlight in Maine" and "Death on the Pale Horse," "Diana's Hunt" and "Elegy in a Country Churchyard," Thomas Eakins' "Music," "Addie" and "The Pathetic Song," Winslow Homer's "The Herring Net," "The Look Out—'All's Well'," John Singer Sargent's "Mrs. Charles Gifford Dyer," and "Robert Louis Stevenson" and his well known "Egyptian Girl," and Whistler's famous "Mother," and several others of his, including "The Artist in the Studio," and "Nocturne, Southampton Waters."

Mary Cassatt, the only American woman recognized by the French as ranking with Manet and Degas was represented by "At the Opera," "The Girl Combing Her Hair" and "La Toilette." Duveneck's "Whistling Boy" and Blakelock's "The Vision of Life," Inness' "Coast of Cornwall," "Storm," and "Moonlight on Passamaquoddy Bay," were shown with works by Maurice Prendergast, while Twachtman, Arthur B. Davies and George Bellows were all represented. Seven galleries were devoted to contemporary American painters, many of whom cooperated with museums and individuals in gathering together what was the most comprehensive loan exhibition of works of American masters ever achieved. With them were shown works of contemporary artists of France, Italy, England, Germany, Switzerland, Poland, Norway, Spain, Russia, Mexico and Czechoslovakia.

To the Art Institute's own exceptional exhibits of sculpture were added valuable and important pieces representing the work of leading American, French, and German sculptors. Charles Cary Rumsey, Stirling Calder, Lorado Taft, Paul Manship, William Zorach had magnificent pieces in the American group. The work of Maillol, Bourdelle, Rodin, Jean Poupelet and Despiau of the French, and of Lehmbruck, Belling, Di Fiori, Barlach, and Kolbe of the Germans was shown as were others of such international importance as Mestrovic, Milles, Kai, Nielsen, and Epstein.

Paralleling the exhibitions of painting and sculpture, in the Print Galleries of the Institute there was an exhibition in two sections of the greatest masterpieces in the history of the graphic arts. Some of the finest collections in the world were represented in either "Prints by Old Masters," or "A Century of Progress in Print-making". In the former the first two centuries of the development of the graphic arts in Europe were shown. Development of early graphic art was traced from

fifteenth century woodcuts and engravings to its most famous representatives, such as Dürer, Holbein and their contemporaries. The progress of engraving in the north of Europe was represented, and Italy's activities were traced from the rare *niello* prints to the great accomplishments of Pollaiuolo and Mantegna.

The exhibition of the art of etching began with Dürer's "Christ on the Mount of Olives," 1515, and its development in Germany and France was followed through the work of Altdorfer and Hirschvogel, Callot and Claude. The rise of lithography was shown from Delacroix to Daumier, followed by examples of present day revival in a section devoted to contemporary work.

The art exhibit was selected and assembled by the Art Institute which was responsible for the care and return of the borrowed paintings and pieces of sculpture. A Century of Progress, for its own part, agreed to permit no other art exhibit under its control or sponsorship either on the grounds or elsewhere. The only exception to this was the exhibit of religious art in the south bay of the Hall of Religions. The art of the Christian church in painting, sculpture, tapestries, robes, mosaics, altars, and candelabra was gathered from seven European countries. The various objects included works by Catholic, Jewish and Protestant artists.

CONCESSIONS

"Come right on down close. We want everybody to hear!" "We guarantee a thrill each and every minute!" "Come up close, right up close. If you folks realized how hard it is to talk loud, you would come up close!" "I'm going to bring the whole troupe out—look at them!" "I don't want to keep you in the sun. You'll like it in here. Come on in—only twenty-five cents." "Hurry, hurry, hurry!" The voice of the barker was heard in the land. Vying with each other, they "ballyed" for lions, for elephants, for rides and shows, for foreign villages, for dancers, for every conceivable attraction. The Midway was alive, alight, and noisy, the noisier the better. Crowds jammed the walks, every street and passageway seemed a solid mass of humanity, and the closer they were packed, the better they seemed to like it. They had eaten, they had rested, they had been instructed;—now evening had come and they were out to "do" the Midway.

The concessions at the Fair provided plentifully for all tastes. A Century of Progress itself added special attractions, and many exhibitors supplied free shows and entertainment which brought the public in droves to their exhibits. In general, the rules of the Fair were well obeyed. Occasionally, a concessionaire got out of hand, or more likely, the ballyhooing took on a misleading or undesirable tone, and then guides, police, or even Fair officials quietly went to work until order was established again.

Visitors at exhibitions appreciate beauty and the opportunity of learning. But they must also be amused, fed, and made comfortable. Without amusement, food and drink, and the comforts of life, any exposition loses its charm.

To supply these needs, a concession department becomes an essential. It has a

wide range of duties and much grief. Perhaps this is because it has to deal with such a variety of operations and people. The head of a concessions department must not lose sight of the high aims of his exposition, but he must also understand showmanship; he must be able to wrestle with experienced, down-to-earth performers and producers; he must know as much about food and food costs as the restaurateur, and, when space becomes scarce, he must decide whether the public would prefer trained seals or a shooting gallery. And, never for a moment, must he lose sight of the fact that the concessions department is counted upon to bring in financial returns. Profits of a fair depend in large degree on the type and handling of its concessions.

The concessions department at A Century of Progress was officially established on July 24, 1931, with Dr. Forrest Ray Moulton, an eminent scientist, in charge. It thus had almost two years in which to set up its organization, its rules and regulations, and to obtain the type of concessions which would meet with the approval of the Fair and of the public and at the same time make money. These requirements were all eventually met.

Policies and Rules

Preparation of the rules and regulations was among the most important first steps to be taken, a difficult task because of the necessity for their rigid enforcement. At A Century of Progress they were drawn up with an idea of a fair profit for both the concessionaire and the Exposition. The Fair adopted the liberal policy of taking only a small or even no part of the gross receipts of a concession until its capital costs had been amortized. From that time on, the percentage was gradually increased until the net profits of the concession were divided equally between the concessionaire and A Century of Progress. Such an arrangement, while highly satisfactory to both contracting parties, demanded much adjustment, as different concessions came into their own at different rates of speed. Some were affected more by weather than others, some by the character of the crowds which differed on various days, some by accidents or other circumstances beyond their control. The elasticity which was employed in dealing with the concessionaires made for good will and proved in the end to be of financial benefit to everyone.

Previous fairs had had the unfortunate experience of having many of the concessions go bankrupt and close during the lean early weeks after opening. The great crowds do not arrive until after the Fourth of July, but the daily overhead or "nut" is continuous. Too many concessionaires are overly enthusiastic and spend far more on building their shows than their estimates contemplated, so they have no reserve to maintain operation until the big profit period arrives. If the Fair takes its normal percentage during this critical period, it may well force highly desirable attractions to close. This has further repercussions, as a blank spot on the Midway adversely affects its neighbors and, in its desire to reopen a show, a Fair may be tempted to relax its standards. The policy adopted by A Cen-

tury of Progress was largely instrumental in keeping most of its concessionaires happy and prosperous.

Another stand taken by the Exposition was that no employee or agent of A Century of Progress should have any financial interest directly or indirectly in any concession or in its financing without the express authorization of the Board of Trustees of A Century of Progress. This provision, strictly complied with, helped materially in keeping the slate clean.

A safeguard which prevented what might have been a long series of misunderstandings and difficulties was the article in the rules and regulations providing that no concessionaire would be permitted to assign, transfer, or sublet any portion of the space allotted him for a concession or any part of his interest in the concession without the written consent of A Century of Progress. It was recognized that the Exposition management itself must keep absolute control of all leases whether for exhibits or concessions, to avoid objectionable features. Also, this prevented promoters from getting permits for concessions and selling them to others at a profit. The Fair would not accept an application for a concession until the applicant had fully arranged for its financing.

A rule with a long and honored history, and yet so obvious that it might be forgotten, was that no concessionaire would be permitted to operate or maintain any type of concession other than that specified and described in his application without the written consent of A Century of Progress.

In order to avoid an undue number of kiosks, or small detached stands, without unity of plan or type of architecture, the sales concessions were limited to booths in the general buildings of the Exposition and to special buildings constructed for the use of concessionaires.

A policy which had not hitherto been general in expositions, related to the letting of single contracts for specified articles, such as food or souvenirs, instead of a multitude of contracts to separate individuals. There were many advantages in this plan. A single contract for popcorn is much easier to close for a violation than would be twenty or fifty. The labor of making deliveries of material and goods is greatly reduced; central storage, if necessary, is more readily supplied; quality can be more easily controlled; unsatisfactory conditions of operations can be corrected with less trouble and time, and accounting is much simplified. Of prime importance, is the fact that a large concern is less likely to get into financial difficulties than small ones operating on a shoe-string.

It was the policy of the Fair to give its major concessions such as those for food and transportation to large, well-established concerns, rather than to groups organized for the sole purpose of operating a Fair concession. The former had reputations at stake and would permit no infractions or sneaky practices which would jeopardize their reputations when the Fair was over. The latter group, often with unnamed backers, would go out of existence when the Fair was over and hence might have fewer inhibitions toward making a quick profit at the expense of the customer.

The problem of itinerant vending was ever present. A Century of Progress

established the policy that there should be no wandering hawkers on the grounds, though requests, some of them seemingly reasonable, came from highly reputable groups. The restrictions on itinerant vending were occasionally waived in behalf of public needs, such as the selling of rubber capes during a rainstorm.

Feeding the Millions

The Department sought to keep in mind first and foremost that concessions should be solely for the benefit and satisfaction of visitors to the Exposition, and that the interests of the public should be paramount. People differ so much in their ideas of entertainment that the best solution is to give as wide a variety of good amusement as could be provided. If people liked good music, well and good. If they preferred monkeys, let them have them. Lounges for tired sight-seers were welcomed by all. Good drinking water was always to be found. The greatest problem of the Exposition was to please the great American fairgoer on the question of food. It was paramount that only the best quality of foods and beverages should be sold. All purveyors of food were required to keep up the quality of their table and all food was prepared and served under the best possible sanitary conditions. The food served on the Fair grounds was equal in quality and price to food of the same grade served elsewhere. It was not all expensive food, as good meals could be bought in a number of the restaurants at prices ranging from fifty cents to one dollar.

The other real problem relating to food was quantity. How many eating places should there be? What should be their separate and combined capacity? The answers to all of these questions depended upon unknown quantities. Would the appetites and purses of visitors call for simple low-priced meals or for more elaborate and expensive ones, and in what proportion? Where would the crowd be—around the Hall of Science, in the south end of the grounds or on the Island? The best that could be done was to estimate the probable attendance, and attempt to ascertain from a study of records of previous expositions what percentage of people would eat on the grounds. The Fair had been open only a short time when it was apparent that there was insufficient provision for the hungry crowd. It was simple to increase the seating capacity of the restaurants, and to put up additional lunch stands. This was more satisfactory than having too great a number of eating places with the concessionaires losing money.

There were ninety-eight restaurants and cafes on the grounds with a total seating capacity of thirty-four thousand, six hundred and thirty-three. Many of them had name bands and orchestras, floor shows, wandering singers, and other forms of entertainment. Among the larger ones were: the Muller Schlitz Garden Cafe seating 1,000; Pabst Blue Ribbon Casino seating 2,500; Victor Vienna Garden Cafe seating 1,500; Old Heidelberg Inn seating 4,000; and Muller Pabst Cafe seating 2,000.

Among the concessionaires serving food and drinks from stands were: Crown Food Company with fifty stands for hot dogs, hamburgers and fried ham sandwiches; the Doughnut Machine Corporation with ten stands; Coca Cola with

forty stands; Orange Crush with sixty stands; root beer, twenty stands; candies, fifty stands; fruit and nuts, fifteen stands; tomato juice, twenty stands; pineapple juice, ten stands; ice cream, thirty-three stands; popcorn, forty stands.

Selling non-food items were the Century News Company with fifty stands for souvenirs, and the Green Duck Company. The Moffett Studios took portraits. There were bonded checking stands, a tobacco shop, several general merchandise stores, a drug store, filtered water stands, pay telephone booths, and hotel service information.

Kaufman-Fabry Company, the official photographers of the Exposition, had a shop where camera and film supplies were sold.

Stands were well distributed over the entire Fair grounds, and usually in grouped shopping centers. This made for greater convenience, and accessibility for visitors and prevented undesirable competition among vendors.

During the period preceding the opening of the Exposition, a total of 396 concession contracts were let, of which only 21 were cancelled and 11 superseded by subconcession contracts. After the opening of the Exposition the initiation of sub-contracts was assigned to the Operations and Maintenance Department subject to their approval by the Concessions Department. Under this arrangement 311 sub-concessions were accepted by the Exposition. The entire number of contracts and sub-contracts negotiated was 887, and included foreign villages, restaurants, food and drink stands, animal shows, amusement rides, merchandise, spectacles, shows, news stands, souvenirs of various kinds, transportation, chairs, books and printed material.

Revenues from Concessions

In addition to the percentage charges received from concessions, there were a number of other sources of revenue derived directly or indirectly from concessions. The concessionaires were required to pay "privilege charges" for vacant sites on which they constructed their concessions. These charges were due in advance and provided a total of \$206,000.00 to the Exposition. Space charges were for two types of space; that in structures erected solely for concessions, and for exhibit space sold for the purpose. In both instances the buildings were erected by the Exposition, hence the \$653,000.00 received from this source did not represent net income.

By January of 1933 two bridges were available from the mainland to the Island, the causeway at the north end, and the bridge constructed by the Fair at the center of the Island. Funds were not available for a third bridge at the south end. The vital need for a bridge connecting the southern end of the grounds and the Island was plain from the first, so means were sought to finance the expensive undertaking. The possibility of placing shops upon the bridge and applying the rentals to the construction of the bridge was considered, and preliminary sketches were made showing that enough concession space could be provided to pay for the cost of the bridge which was estimated at \$100,000. A contractor agreed to build the structure with the understanding that all receipts from the sale of space

on the bridge should be applied to his contract price until June 1, 1933. If it was not completely paid for by that time, the contractor would accept gold notes for the remainder of his bill. The amount involved in the building of this bridge was not large as exposition figures go; and it is recounted here as being typical of many such ingenious negotiations, based on the policy of no commitments unless definite means were in sight to meet them. The bridge was completed before June at a cost of \$93,686.53, and was completely paid for by the sale of concession space upon it.

Amusement Areas

In contrast to other fairs where the amusement areas had usually been definitely segregated, A Century of Progress had several amusement areas. The reasons for this were the lay-out of the grounds which, being long and narrow, made it difficult for the visitor who might be at the opposite end of the grounds to get readily to a single Midway, and the fact that major areas were already occupied by large exhibit groups. Three amusement areas resulted—one from 23rd to 27th Streets, another between 35th and 39th Streets, and one at the north end of the Island. Each of these contained villages, shops, rides and shows, so that the casual visitor, no matter where he was, could always turn from his contemplation of the serious side of the Fair to the lighter vein of the Midway.

Soldier Field, the great arena bordering on the grounds, was expected to be an important asset to the Exposition. However, it was found impracticable to sell concession space in the Field, and the amusements attempted there did not prove profitable. While immediately adjacent to the Exposition grounds, it was psychologically far removed, as it was a permanent structure of different architecture and off the main line of travel.

The Midway

The Midway was amply provided with rides to meet all desires for thrill or novelty. They were largely owned and operated by Mr. Harry Illions. He was not only one of the first concessionaires to demonstrate confidence in A Century of Progress, but through the operating period proved a loyal and effective friend on all matters pertaining to the Exposition's welfare.

Once it became established that the Fair was really to open, the early apathy diminished and many excellent shows appeared on the Midway.

"Hollywood" presented moving picture sets and techniques and other attractions of the Coast City.

"Spoor's Spectaculars" gave motion pictures on a gigantic screen, using 64 mm. film giving the effect of a third dimension.

"Darkest Africa" was a reproduction of native huts in a tropical setting, with tribal dances, fire-eating and native dances by Ituri pygmies and stalwart Camaroons.

"Life" presented an excellent collection of human embryos and a synopsis of pre-historic man.

"Snake Show" by Cliff Wilson could be easily located by the squeals of the ladies. It featured monster pythons and many varieties of snakes and reptiles.

"Odditorium", a "Believe It Or Not" show by Ripley, while typical of the classical freak show, had many new performers. A trained nurse was in constant attendance for those who couldn't take it standing.

"Seminole Indian Village" showed life in the Florida Everglades, including alligator wrestling, and an exhibition of archery.

"Bring 'Em Back Alive" by Frank Buck was an animal show, with a Monkey Island and a great variety of exotic creatures.

Many smaller shows were on the Midway, such as the flea circus, the shooting gallery, and games of chance and skill. These latter games required continuous policing and many were closed by the Fair authorities when they elected not to conform to regulations or cheated the public. Ceaseless care must be exercised in insisting that actual probability of chance be available to the public. Unscrupulous operators have concealed devices which change the pay-off ratio to a more reasonable one on official inspections. Other operators have a vicious "come-on" system wherein the unsuspecting visitor receives on his first tries two of the three necessary credits to win the grand prize. His cupidity is aroused and he spends his last cent in the futile effort to get the last and critical one. Clever manipulators play on the weaknesses of normal people, leading them on to a goal ever out of their reach, for the game is "fixed". Fair authorities must be ruthless in exterminating this breed as soon as discovered, or better still, prevent them from coming in.

The baby incubator presented by Dr. M. A. Couney was one of unusual attraction and scientific interest. A number of premature babies were given the most expert care in an elaborately arranged nursery, with specially designed and intricately constructed incubators with complex controls for temperature and humidity. The public viewed the babies through a wall of glass. Through his many years of successful rearing of premature babies, Dr. Couney had achieved wide recognition by the medical profession and he performed an important social service. An unthinking public asked many amusing questions:

"Are these the same babies you had at the St. Louis Exposition in 1904?"

"Where do you get the eggs?"

Special Problems

A major problem of Exposition management is allotting existing funds most advantageously among the many conflicting demands and aspirations. It demands nice decisions and disturbing denials, for there are always so many more intriguing plans than there is money to meet them. Normally, utilities and necessities have priority over ornamental features and luxury items, so washrooms and toilets were high on the agenda, though their cost would be in the many thousands of dollars.

A concessionaire offered to install these fixtures at his expense, provided eighty percent were coin operated and the receipts paid to him up to the amount of his

investment plus a fair profit. It was a hard decision, but it permitted the building of many other desirable features on the grounds. However, it provoked much criticism during 1933, so the next year they were taken over by the Exposition and made free.

Loud speakers along the Midway became a nuisance, particularly when their excessive volume and continuous use competed with neighboring ones. Efforts to control them by inspectors proved fruitless, as they would be turned up as soon as the Fair personnel left. Arbitrary and summary action proved the solution, with Fair technicians cutting wires and dismantling speakers of repeated offenders.

Fan dancers and oriental dancers presented a serious dilemma. The first arrest taken to court presented the Fair with an injunction to leave the show alone. The attendant publicity increased the box office and other concessionaires wanted to change their shows. Some groups accused the Fair of being too lax, while others thought it too strict. The Fair demanded that all live up to their original contracts and remain within the law. Later violations were not taken to court, much to the disgust of the offenders who desired the notoriety, but the shows were closed by Exposition police, the offenders' passes taken up and they were denied future entrance into the grounds.

Collection of Customs Duties

The United States Customs, through an Act of Congress, made practically the entire grounds of A Century of Progress a bonded warehouse. This permitted merchandise from all over the world to be placed on exhibit and offered for sale within the grounds before it had been cleared of its duty through the regular customs channels. This made the Exposition ultimately responsible for any unpaid duties. Most of the foreign concessionaires had little money upon arrival, and it proved to be a costly burden to A Century of Progress.

The Act of Congress provided that merchandise used for exhibit purposes only, and which was returned, would be free from duty while being exhibited, but if the merchandise were sold, then duty was to be collected immediately. About half way through the Fair it became evident that A Century of Progress had a liability in excess of its bond of \$100,000 which had been placed to guarantee the payment of any unpaid customs. Seventy-five concessionaires and sub-concessionaires had imported goods both for sale and display purposes upon which customs duties were yet to be paid and an investigation of all duty delinquent accounts and a system by which close contact was kept on the entire situation was instituted so that the situation was satisfactorily adjusted.

The gross sales of all concessions amounted to \$48,730,000.00 for the two years. The Fair's participation amounted to \$5,438,000.00 in addition to the \$1,396,000.00 received for space charges.

While the attendance was less in 1934, the income from concessions was larger, due to the amortization of installation costs and the knowledge of their most economic operation gained from the experience of the previous year.

FAIR-OPERATED ATTRACTIONS

The Adler Planetarium, a permanent institution, was a gift to Chicago by Mr. Max Adler. Because of its location within the grounds of A Century of Progress, special arrangements were made with the South Park Commissioners which resulted in its being classified as a concession. Lecture demonstrations started on an hourly basis, but during the months of high attendance at forty-minute intervals. Often by ten o'clock in the morning queues hundreds of feet long would be seen awaiting admission. The gross receipts of the Planetarium from May 27th to October 31, 1933 were \$208,118.50.

The two best-known and most spectacular of A Century of Progress's own concessions were "The Wings Of A Century" and "The Sky Ride."

Wings of a Century

"The Wings of a Century" was located near the 39th Street entrance and, fittingly, across the roadway from the Travel and Transport Buildings. This pageant of the incredible changes in transportation from the stage coach to the airplane was written by Edward Hungerford and directed first by Helen Tieken and later by John Ross Reed. Never did pageantry portray more colorful or dramatic episodes. Never did a time scope permit of the staging of so many extremes. Never did men, women, children, whites, negroes, Indians, the pioneer, the sophisticate, horses, mules, wagons, stagecoaches, boats, engines, (primitive and modern), and soaring airplanes combine in an outdoor show with such effect. Lake Michigan, blue, gray, or green, as pleased her mood, was the backdrop for the stage. The settings were confined practically to the entrance wings.

But the drama and the color of each episode were so vivid that only the waters of the lake and the blue of the sky were needed to enhance the work of the players.

The stories of the development of transportation and of the rise of American civilization parallel each other. In the telling of this world-challenging story, one hundred and fifty actors and performers were used, and many distinguished names were found in the cast. The pageant employed seventy horses, thirteen full-sized trains showing the evolution of locomotive and cars, a series of early automobiles, a clipper ship, a river steamboat, a reproduction of Fulton's "Clermont", two canal boats, a stagecoach, emigrant wagons, fire engines, fine carriages, and a model of the Wright Brothers' first airplane.

Among the episodes shown was the prologue in two scenes, depicting wilderness pathfinders, and a band of Indians, their horses dragging the primitive travois. Daniel Boone appeared with his caravan and accoutrements. Contrasting with this was "Little Old New York" in 1807. Lake Michigan was the New York Harbor, and familiar customs of the day added beauty—the lamplighter, the old woman with her apple cart, the rambling gentleman on a hobby-horse bicycle, and the stage coach starting for Philadelphia.

There was a scene along the Erie Canal. There was another scene showing the famous race between the Baltimore & Ohio's first horse-drawn coach and the Tom Thumb locomotive built by Peter Cooper. The white horse won. One of the most thrilling episodes was the gold rush of '49 with prairie schooners, pony express riders, and the Wells-Fargo stage coach with its precious load of gold. There was the historic meeting of the Union Pacific and Central Pacific railroads when the continent was spanned for the first time by the "Iron Horse". Other scenes bridged the gap until the days of the "Gay Nineties", the Columbian Exposition, and the triumph of travel in the air at Kitty Hawk. All forms of modern transportation assembled for the final scene.

Music throughout the performance, flags floating, colorful off-stage dialogue, all lent life and color to one of the most popular amusements on the grounds. But it was more than a show, for the audience left with a fuller appreciation of the factors which made our country great and with a surge of pride at being Americans.

The Sky Ride

Soft green lights flooded the tops of the two sky-piercing towers with their red-patterned platforms, six hundred and twenty-eight feet from the ground. Higher than any building in Chicago, the Sky Ride stretched its massive cables more than a third of a mile across the Lagoon connecting the mainland and Island and acted as a symbol of the relationships between the basic and the social sciences, the two buildings it connected. Its high lights shining so far above and always cutting through the darkness became well-known outposts to guide the visitor to his destination.

The Sky-Ride was to A Century of Progress what the Eiffel Tower was to the Paris Fair of 1889 and the Ferris Wheel was to the Columbian Exposition held in

Chicago in 1893. Double-decked rocket cars, twelve in number, ran suspended from the four cable "track" between the two towers eighteen hundred and fifty feet apart. The car seats were arranged lengthwise, so that passengers faced outwards for a better view of the panorama below them. The cars were suspended from their aerial track by four-wheel trucks, each wheel running over a separate cable to insure absolute safety. The cableway had a breaking strength of 220,000 pounds per square inch of cross section, and only one span, that of the George Washington Bridge across the Hudson River just above New York City, exceeded it in length. The steel for the towers weighed 2,000,000 pounds, and over one hundred miles of stout strands of steel were used in cables for the aerial track and the 600-foot-long backstays.

Passengers desiring the thrill of the aerial ride were transported to the rocket car platform at the 200-foot level by four elevators each holding thirty persons. Many, who did not wish the rocket-car ride, went to the 600-foot tower tops to gaze with entrancement at the panorama of light and color stretching on every side. In the daytime they had a bird's-eye-view of flowered lawns, multi-colored buildings, and the fountain playing at the north end of the lagoon. Looking to the south, one could see the Indiana dunes, to the north the wooded hills of Wisconsin, to the west beyond Chicago's jagged sky-line the soft blending of its suburban areas, and to the east the seemingly limitless waters of Lake Michigan. At night the Fair grounds became a sea of sparkling jewels, breath-taking in its grandeur.

Flood lights attached to the bottoms of the elevators transformed the glass shafts into mounting and receding pillars of color as the elevators rose and descended. The aluminum and glass rocket cars emitted colored steam like rocket tails, as powerful searchlights trailed them as they ran from tower to tower.

Cooperating with A Century of Progress in erecting this aerial runway were the Otis Elevator Company, Mississippi Valley Structural Steel Company, John A. Roebling's Sons Company, Inland Steel Corporation, and the Great Lakes Dredge and Dock Company.

Nathaniel Owings, an associate of Louis Skidmore of the Works Department, was largely responsible for the organizational work of Wings of A Century and Skyride, and was later in charge of concession operations. His original suggestions led to many of the Fair's unique features.

Old Fort Dearborn

Two widely contrasting concessions which A Century of Progress sponsored were the reproduction of Old Fort Dearborn, and the Golden Pavilion of Jehol, the pioneer west and the most sophisticated periods of the Far East.

It was fitting that the Exposition should reproduce Fort Dearborn, for on its site now stands a modern skyscraper, and the pathway of the long and ill-fated march of its people on the day of the massacre now is marked by wide boulevards, stately buildings, and peaceful parks. The little log fortress was the first

completed exhibit unit of A Century of Progress. The materials used to build the original Fort in 1803 were easily obtained. But to duplicate them for an exposition in 1933 was not so simple. Norway pines were brought from Wisconsin to furnish logs for the stockades and buildings. Stone that had lain in the open for many years made a weatherbeaten powder magazine, chimneys and fireplaces. Glass, discarded because of its flaws, reproduced the crude little windows. The entire group of buildings was reconstructed from old maps in the office of the War Department and data from the Chicago Historical Society and they were faithful to the smallest detail. The interior followed as closely as possible that of its predecessor. From a tall flagstaff within the Fort, the United States flag with its fifteen stripes was kept flying.

The Golden Pavilion of Jehol

From thousands of miles away, and from a civilization equally distant came the Golden Pavilion of Jehol. Like Fort Dearborn it too was a reproduction. The original was built in 1767 at Jehol, summer home of Manchu emperors from 1714 until the abdication of the last of their dynasty. The double-decked roof of the Temple was covered by copper shingles coated with pure gold leaf. On the exterior twenty-eight columns in red lacquer, sixteen feet high, supported the lower deck. Carved grills in red, blue, yellow, and gold enclosed the glass window panes. The cornice beams were gilded and carved with images of dragons, cats and dogs. Hundreds of pieces of carved wood formed the gilded ceiling, while within the temple were priceless images, incense burners, priestly robes woven of pure gold thread, and other precious objects brought from the Orient. The thousands of pieces were so precisely joined that neither nails nor other fastenings were used in reassembling the structure.

The Enchanted Island

A Century of Progress, in its search for interests, historical and thrilling, did not forget the groups of youngsters who would attend the fair, and constructed the Enchanted Island, a perfect amusement park and resting place for children. It was sponsored by several construction companies, and the Junior League of Chicago, which arranged and presented the programs.

A restaurant serving proper food for little tots, a Magic Mountain with a thirty-inch-deep moat for motor-boat rides, a Fairy Castle with its exciting slides, miniature air rides, a play house called Adventure Land with Mother Goose stories illustrated by characters and scenes, an undersized maze, pony rides, and the Children's Theater, where different productions were given, marionette shows, merry-go-rounds, and other fantastic and fun-making devices were among the many attractions offered. Trained nurses were in constant attendance to look after the welfare of the little ones, and to check on the possible presence of communicable diseases.

Chapter 19

VILLAGES

Among the most engaging concessions at a Century of Progress were the foreign villages that danced and sang through the two-year drama of the Fair. The five present in 1933 were so successful that the number was quadrupled in 1934. While all of them were authentic and beautiful there were too many for visitors to absorb. With their crooked, uneven streets and picturesque architecture, their old-world food, wares, and recreations, all in their own accustomed setting, they made a colorful contribution to the international atmosphere of the Exposition. Two of the '33 villages—the Belgian Village, and the Streets of Paris—carried through the second year. The Oriental, Moroccan and Chinese villages were only a part of the first year's Fair.

The Belgian Village lifted its gabled houses, reminiscent of Spanish rule, straight from narrow, irregular, cobbled streets over which amiable dogs driven by costumed milk-maids pulled little milk carts which carried brass cans. The gate of Ostend, the old French-Gothic church of St. Nicholas at Antwerp, an old town hall, and the city gate of medieval Bruges were faithfully reproduced. Into little shops came the sabot-maker carving wooden shoes from blocks of white willow, an ancient Koper Smid hammering at his anvil, glass blowers fashioning their fragile deer and dogs, birds and flowers, and the famous Belgian lace-makers with their delicate lovely fabrics. Folk dances by peasants in old Flemish costumes attracted crowds to the public square in the afternoons and evenings. The cafes served distinctive Belgian dinners in the dim-lit rooms and on the terraces of the ornate buildings.

The Streets of Paris, with the typical rollicksome ways that endear themselves

to those who live with them, seemed to have been transplanted directly from Paris to the Fair, with the old walls, sidewalk cafes, and faithful reproductions of well-known buildings. Strolling artists and musicians, dancers, fashion shows, and swimming and diving exhibitions, furnished continuous entertainment.

The Moroccan Village was northern Africa alive at the Fair with Moors in costume parading its streets and camels padding along the way. Dancing girls wore the baggy trousers and head shawls that dancing girls of Morocco have worn for centuries. A beggar with bell and alms dish looked as beggars have looked in Morocco for time immemorial. Barbaric jewels and heady perfumes, gay rugs made for spreading on sand, African leather goods, camel clothes, metals, and potteries were offered for sale in its shops. In the coffee shop they served minted tea or thick coffee made by their famous recipe, "black as hate, sweet as love, and strong as hell." The village was dominated by a muezzin's tower.

An Oriental Village featured dancing girls, tumblers, and palmists. Gold and silver hand-wrought jewelry set with moonstones, zircons, garnets, tourmalines, and other semi-precious stones, bright colored leather Moroccan slippers, rugs and cushions, embroideries, and fine pottery representing a recently revived art of Palestine were offered for sale. And for the venturesome, camels were available for slow padding rides through the streets.

The Chinese Village was a copy of a walled village in China. Its exhibits included carved jade, porcelain, lacquer ware, silks, embroideries, rugs, furs, carved ivories, furniture. A carved jade representation of a Chinese temple of seven stories, fifty inches high, occupied its own shrine. Entertainment was furnished by Chinese actors in dramatic interpretations, and by a troupe of Chinese acrobats.

The English Village went back three centuries to bring its famous literary years and still-remembered inns into the twentieth century. Entrance was through gateways reproduced from those of the Tower of London and guarded by "beef-eaters" with halberds. The presentation of Shakespeare's plays in the Globe Theatre, produced as they were in his time, was so popular that a continuous line stretched from the box office into the narrow street. The Cheshire Cheese Inn, a delightful copy of the old gathering place of Dr. Samuel Johnson, Oliver Goldsmith, and James Boswell, served beef and kidney pie made from the time-honored recipe, and showed faithful replicas of Dr. Johnson's favorite table and chair. To the Red Lion Inn, Queen Elizabeth came nightly with her entourage and dined lustily. The Old Curiosity Shop where visitors met Little Nell and her grandfather was a charming leisurely bit of the early nineteenth century.

The Irish Village ran the gamut from Tara's Hall where Irish kings dwelt a thousand years ago, to the dark thatched cottage of the humblest peasant. Enclosed by a Norman wall, its ancient gray castles, fishing smacks, and flowering fields of flax were deep in the green of moss, fern, and shrubbery. A jaunting cart carried visitors over the rough streets. On the village green Irish songs were

sung with the authentic lilt of the Emerald Isle, and folk dances and jigs were danced to the music of harps and bagpipes. The Book of Kells, dating back to the eighth century, a twelfth century harp, and a beautiful collection of Irish paintings were on exhibition.

The Black Forest Village brought to A Century of Progress, a gala, spectacular fling of winter. Snow was banked on cottages and on steep-slanted chalet roofs with icicles hanging from the eaves. On a frozen millpond expert skaters gave exhibitions of fancy skating. Little German bands strolled among the spectators, and in the shops costumed mountaineers of the Black Forest country worked on native handicraft. Wood carvers and a village blacksmith plied their trades and cuckoo clocks came to completion under the eyes of the visitors.

The Dutch Village waved its windmills and flaunted its gorgeous tulips in a typically Netherlands fishing village complete with canals and a drawbridge. The houses were a riot of color with red tile roofs and brilliant blue shutters. Inside, even with the cow stable opening into the family living quarters, their outstanding feature was their immaculate cleanliness. Edam cheese was manufactured and marketed by villagers' boats floating on the canals. Dutch maidens in stiff white caps and young men in great loose trousers and wooden shoes, danced in the village square.

The Hawaiian Village staged the romance and drama of the island against an active volcano. In its flaming crater a Hawaiian girl was sacrificed as the climax of the nightly show. The Palm Garden restaurant, serving native food, did a pleasant business and Hawaiian music and dancing were provided by native entertainers.

The Italian Village was gay, colorful, and historic. Visitors passed through a reproduction of the gate of the walled town of Signa and faced the broad ramp leading up to a temple of Apollo. The Vias Cristoforo Columbo and Marconi were lined with distinctive houses and shops in which craftsmen worked on hand-made jewelry and pottery. The leaning tower of Bologna, an exact copy of a feudal garrisenda tower of the thirteenth century was surrounded by arcaded loggia.

The Mexican Village was joyous, sunshiny, and full of bright color, merry music, and carefree dancing. Highly seasoned dishes of Mexico were served in restaurants and on terraces. In quaint houses pottery was made, serapes woven, and leather carved. The dominant notes of the village were the replicas of beautiful old churches, the Cathedral of Cuernavaca and the Acatape church with an Amamecca chapel.

The Oasis was a South Mediterranean village from the edge of the desert. A gay, green spot, as its name implied, with tall palms and olive trees, and a lively village square. Syrian war dances were performed by heavily jeweled Oriental dancers, to weird music from pipes and strange stringed instruments. Strolling leisurely about were sword-swallowers, fire-eaters, and solemn men who walked on broken glass as easily as foot-weary Fair visitors trod the welcome soft green of the square. Jugglers unrolled their carpets nonchalantly and gave

their exhibitions. In shops around the walls native workers wove rugs, made jewelry, hammered brass, and tooled leather.

The Spanish Village assembled gray old castle walls, ancient houses, and exhibits from six provinces of Spain and half a dozen centuries. Notable among the buildings was a reproduction of the eleventh century monastery of Poblet in which is housed the famous shrine of the Virgin of Pilar. The gateway to the village was through battlemented watch towers reminiscent of the Moorish conquest. In the shops that lined the picturesque streets with their ambling, amiable donkeys, were weavers and potters working at their ancient crafts.

The Streets of Shanghai, which succeeded the Chinese Village of 1933 brought the Orient to the shores of Lake Michigan in a gaily-colored, crowded village. High, brilliantly painted pagoda towers stood on either side of the entrance. Its narrow winding streets were lighted by thousands of Chinese lanterns. Fronts of little tea shops were painted in bright colors. Rare silks, jades, bronzes, and porcelains were on exhibition.

The Swiss Village, in a snowy Alpine setting, reproduced characteristic parts of the older portions of Berne. Young men and women in Swiss costumes danced native dances in the village square, and a troupe of yodelers entertained from the balcony of a chalet. Watch makers and lace makers worked at their delicate crafts. St. Bernard dogs were brought from the monastery of St. Bernard, and a litter of beautiful sociable puppies born in the village during the early weeks of the Fair, added a friendly interesting touch. Wood carvers, wine producers, and chocolate makers exhibited their wares, and the variety of cheeses shown was incredible.

The Tunisian Village was a bizarre, North African, living picture with exotic food, nomads, skilled handicraft workers, bazaars, and the muezzin call to prayer from the tower of the old mosque. Dancing girls, jugglers, acrobats, snake charmers, and magicians performed, and solemn people of many races in varied and gorgeous costumes strolled through the streets.

Two villages typical of life in the United States were in sharp contrast. The Colonial Village was as quiet, dignified, and serene as a Puritan Sabbath morning. The Bowery was raucous, rowdy, and captivating.

Old North Church and Mount Vernon dominated the Colonial Village, which was composed of replicas of famous buildings from all over the thirteen colonies. Along one side of the village were Paul Revere's house, the House of Seven Gables, the Old Boston State House, the house in which Betsy Ross made the first American flag, a colonial kitchen, a Pilgrim settlement, Washington's birthplace, the Governor's Palace at Williamsburg, and Longfellow's Wayside Inn. On the other side were the village smithy, Franklin's printing shop, the witch's house in Old Salem, and the pirate's gaol. The Virginia Tavern and the Wayside Inn served early American dishes. All the people of the village wore costumes of the colonies.

The Bowery turned back to the late years of the last century and New York's famous lower east side. The Night Court was in session with night-life charac-

ters stumbling through in swift rough procession. Its vaudeville show brought back old songs, and old types of beauties. Chuck Connors' Place was one of the popular spots in the Bowery.

The Midget Village was a dwarfed reproduction of the ancient Bavarian city of Kinkelspuhl, one of the few walled towns left in Europe. The village had forty-five buildings, municipal, police and fire departments, a church, and a school for its one hundred and fifteen midget inhabitants.

OPERATIONS AND MAINTENANCE

Preparation Period

Visitors loitering within the grounds of A Century of Progress, riding in chairs or in buses, eating in any one of the many restaurants or at a hot dog stand, enjoying the pleasant and comfortable, yet exciting, aspects of a great exposition, gave little heed to how it came into being.

How amazed many of them would have been could they have known of the months of labor and the money that went into the making and keeping of a safe and orderly Fair. They met uniformed and courteous guides, red-coated policemen, pretty girl cashiers, and an occasional helmeted fireman. Once in a while an ambulance glided quietly by. But ambulances were to be seen every day, and it did not occur to the visitor to wonder how and why ambulance service could be immediately obtained on the grounds or where the big white car was bound. That the food was savory and safe, that the grounds were clean and fresh, they took, as a matter of course.

This attitude was the greatest possible tribute to the Exposition and to each of its workers. For there was not an employee who did not feel that part of his task was to help uphold the operating mechanism of the Exposition. The apparent ease and smoothness of an operation is testimony to the assiduous planning of the preparation.

General Services Organized

A fuller realization of what the operating problems would be, presented itself as soon as the Administration Building was occupied. It was decided at that

early date to organize a General Service Department so that when the Fair opened this department could become the grounds operating unit. With this end in view, the General Service Department, as the progenitor of the Operations and Maintenance Department, was set up not only to meet the existing needs, but so that it could expand quickly without breaking down and take over a greater task later on, without undue readjustment. So deeply was this need for future expansion instilled into the General Service Department staff that when the Fair was over they could look back on a minimum of failures caused by undue pressure.

The Administration Building became a proving ground. The first aid station later developed into a hospital. The dining room, established for workers on the grounds, served as a guide for requirements made of restaurant concessionaires. The reception of distinguished guests, prospective exhibitors and concessionaires, and representatives of state and foreign governments at informal gatherings in the Trustees' Room, served as a background and afforded routine experience in handling the hundred and one details of elaborate official functions during the operating period. The problems of getting the staff to work on time when the nearest transportation was a mile away pointed up the traffic problems of 1933. The winter blizzards threatened more than once to maroon the staff, and, in fact, during one of the heaviest storms, the guards at Fort Dearborn were out of touch with the world for four days.

During the pre-Fair period, the General Service Department handled the Administration Building operation, including the restaurant and the barbershop, had charge of the personnel section and general automobile service, operated the pass gates, maintained a stenographic pool, supervised the operation of telephones and telegraph service, the supply and purchase offices, the mail and messenger service, the reception and entertainment of guests, and services which belonged in no other department.

From the time the Administration Building was opened in November 1930 its operation was an important matter. The offices had to be equipped and provided with office supplies. The restaurant proved to be one of the busiest and most necessary of places, because of the distance of the Exposition grounds from the business district and the large amount of evening work which was found to be necessary. Aside from its convenience for the employees of the Fair, as well as for the exhibitors and concessionaires, it served a most useful purpose in the entertainment of business guests of the staff. As the time of the opening drew nearer, civic and social organizations were encouraged to hold luncheon and dinner meetings here, to be followed by a guided tour of the grounds. The General Manager's conference room and the Green room were in almost constant use for entertainment of outside guests or for luncheon conferences of the staff. With the opening of the fair the Trustees' Lounge was added to these available spots. It had been fitted up on the southwest wing of the Hall of Science and decorated and furnished in modern fashion. The Trustees' Room in the Administration Building was extensively used especially

before the opening of the Fair. Frequently the number of guests exceeded that which could be accommodated at the great wedge-shaped table and it was necessary to set up small tables and sometimes to use the adjacent balconies. The restaurant privileges of the Building were never open to the general public but organizations were welcome if they made arrangements in advance.

The stenographic pool was designed not only to furnish extra stenographic service as needed, but also to serve as a testing and training school for the stenographers and secretaries who would later occupy key positions throughout the exposition grounds.

The basis of any sound operation is the orderly arrangement of movement from the base of supply to the point of use. The years 1930 and 1931 saw not only the daily routine functioning of the Administration Building, but also the forming of what was later the World's Fair Police, the development of the information service and of special operating features. At the telephone switchboard there were daily lessons in the plans and lay-out of the Fair. When the number of calls justified it, one operator was assigned to answering questions. Every ceremony, as the breaking of ground for new buildings, every event was treated as a school where one might learn what to do with the hoped-for crowds of the future.

After each piece of construction started, a temporary fence was thrown around it, with a field shack as headquarters for the contractor and such of the exposition staff as were on duty in connection with the project. Each of these units was a little kingdom within itself, with its own guards, watchmen and superintendents. The problems of central government increased with the number of kingdoms.

Fort Dearborn Opened

It was a happy day when Old Fort Dearborn became an operating unit and was opened to the public on May 16, 1931. Great was the disappointment when, shipping its way across the lake with the dawn, came a spring gale bringing with it a threatening sky and a chill wind. Not to be daunted, the parade formed to meet the famous Black Horse Troop and its band. Attired in the colorful uniforms of the United States Cavalry of 1812, they trotted out of the Fort by way of the north sally port and the gates were formally opened. The invocation was pronounced by Bishop George Craig Stewart. The dedicatory address was made by the President of the Fair, and an address on the history of Fort Dearborn was given by Dr. James Alton James, Dean of the Graduate School of Northwestern University. A detachment from the Fort Dearborn Post of the American Legion, dressed in coonskin caps, buckskin shirts and leggings of the old frontier days carried a flag into the fort and raised it to the top of the seventy-foot spruce pole. As the flag, bearing fifteen stars and fifteen stripes, was raised, the Legion Post buglers played "to the colors." A twenty one gun salute was fired by the 124th Field Artillery. A Century of Progress had dedicated its first building and specific operations had begun.

During these early years when finances were so important, the cost of various

operating functions was appalling. Each increase in the number of personnel required a corresponding increase in overhead. Yet, such increases were necessary to provide the skeleton force which would serve as the leaders around which later, inexperienced personnel would be grouped. The experience at Fort Dearborn pointed a way. When the Fort was completed and opened to the public an admission charge of twenty-five cents was made. Response and interest were immediate.

When, therefore, by early June 1932, the grounds of A Century of Progress had been enclosed by a fence and construction had progressed to a point where it was worth seeing, the public was admitted to the grounds at a charge of ten cents. Certain portions of the Hall of Science and the dome of the Travel and Transport Building were made accessible to visitors, in order to increase the interest in what could be viewed, and in the plans of the various buildings in the process of construction. The guides were given instruction which enabled them to give lectures on the various features and to answer the innumerable questions to which a trip through the grounds gave rise.

The Abraham Lincoln concession was opened soon afterwards and on November 19, the Lama Temple, to which an admission charge of fifteen cents was made.

Amusements which were completed early were allowed to operate. Several restaurants and lunch stands furnished food and drink and a pre-fair guidebook appeared. Buses were put into service within the grounds. Round trip tickets were sold which gave the patrons a sight-seeing excursion with the privilege of stopping off at various points and taking a following bus.

Pre-Fair Opening a Proving Ground

The advantages of the pre-fair openings were enormous. First, and what seemed most important at the time, the various admission charges provided the wherewithal to police and maintain grounds and structures without extra cost. Second, a training school for the main event was provided, a proving ground for avoiding mistakes and gave a reservoir of experience which became invaluable in all the operating phases. Moreover, many visitors absorbed a proprietary interest in the progress of installation resulting in secure public goodwill.

Traffic and Transportation

It was early realized that both pedestrian and vehicular traffic would be of prime importance. From the time the first building force moved into the grounds, this question had careful and intelligent study. The loan of Major Elroy S. J. Irvine of the Corps of Engineers was a matter of great good fortune for the Fair. In conjunction with a Traffic Committee, of which Sidney S. Gorham was chairman, a study was made of the broadest aspects of traffic problems. These included not only problems to be encountered on the grounds themselves, but those of transporting large numbers of people to the grounds each day, of providing housing facilities for an influx of out-of-Chicago visitors, of moving

freight into the grounds, both by truck and train. They were problems in which the first essential must be cooperation among existing facilities and the exposition officials. Too great credit cannot be given to the transportation companies, all of which made large contributions to the Fair of their time and facilities.

The Fair recognized the fundamental premise that it should use to the widest extent the facilities already established rather than set up its own agencies. In the short years available, it could never have accomplished what the Convention Bureau, the Hotel Association, the Association of Commerce, the automobile associations, and the railroad passenger associations did in promoting attendance, in listing rooming houses and motor camps, and in bringing in the materials and visitors so essential to the exposition undertaking.

The narrowness of the exposition site made it evident that one transportation artery capable of carrying large crowds quickly from one point to another along this extended front would best serve the purpose. The elevated monorail, the moving sidewalk, and the Never-stop railway, were suggested as possible means of carriage, but shortcomings were common to them all; namely the high cost of installation and the lack of flexibility to meet the constantly changing demands of Exposition traffic. They were discarded in favor of a motor bus system. The drawbacks to bus transportation were clearly recognized—their small unit capacities, delays in loading and unloading, delays in collecting fares, and slow movements on crowded thoroughfares. To overcome these defects, it was decided to have a rapid transit road along the boundary fence, to be used exclusively by the buses; to provide for the payment of fares through a turnstile leading into the rapid transit right-of-way, and to use buses with a carrying capacity of one hundred and twenty-five persons, with open doorways on either side of the vehicle to insure quick ingress and egress.

The Greyhound Corporation secured the contract for the installation of the bus system and sixty buses were used. The two of these buses placed in operation in July, 1932, provided a series of tests to determine the section of the road required for curves of various radii, the proper width of safety islands and for safe passage of buses in motion. Based on these data, a trial station was built at 26th Street and the buses were run in a manner to simulate operation on the rapid transit roadway. As a result of these tests practically no changes were necessary in the rapid transit system after the opening of the Exposition.

Supplementing the buses were chairs and rickshaws for the more leisurely type of sightseeing which such a means of transportation afforded. Nine hundred and fifty chairs and thirty-nine rickshaws were in use during the Fair. The manpower for these vehicles was drawn largely from the ranks of college athletes, at least one of whom in later years became a college president. Their high caliber and courteous attention provided many favorable comments from Fair visitors.

Entrance Requirements

Though eight land entrances to the grounds required more personnel to man them, they were a blessing in relieving congestion outside entrances and in more



Avenue of Flags.

Entrance at 23rd Street.





Hall of Science from Skyride Car.

In the Midst of the Villages.



evenly distributing visitors inside the gates.

The general traffic plan provided for grade separation of vehicular and pedestrian traffic at all entrances. The carrying out of this plan involved the construction of seven passerelles, costing over \$100,000. After their completion it was possible for visitors to approach the Exposition by street cars, buses, taxicabs, private automobiles or on foot without the hazard of having to cross vehicular traffic lanes.

In order to establish the width of pedestrian crossings required, as well as the number of turnstiles at each entrance, a comprehensive set of estimates was made on the probable number of visitors using each entrance. All available data on Soldier's Field and the Grant Park area was compiled. Then each city transportation company was requested to submit its own figures on their expectancy of the percentage of passengers using the different entrances. In order to convert them into an hourly rate, it was necessary to estimate the daily attendance figures and the percentage of the daily total which would occur in a maximum hour. It was believed from records of previous large events of a similar character, that it would be safe to assume that about sixteen percent of a day's total would enter in a single hour; that in an emergency, such as rain storm or the breaking up of a large event, the expectancy would be for maximum hourly egress, twenty-five percent of the day's attendance. It was further figured that on a normal day, the maximum population of the grounds at any one time should be about sixty percent of the day's attendance. From these figures, the widths of the various overhead crossings were computed by using the standard unit figures for pedestrians passing over ramps and stairways. These estimates proved out in practice.

Another traffic problem was how to extend mass transportation lines to the Exposition grounds. The extension of the street car lines was found to offer great possibilities for handling traffic and at the same time to be economically feasible. After considerable negotiation the city approved the extension of both the 22nd Street line, with terminals at the 18th and 23rd Street entrances, and the Roosevelt Road line with a terminal opposite the Court of Honor entrance on Columbus Drive.

The early traffic studies made in Grant Park and Soldier Field showed that a large percentage of visitors to events in these areas came directly from the Loop district. Hopes of the Exposition to assist the other transportation agencies in handling this "short haul" traffic proved unfeasible. Shortly before the opening of the Fair it was proposed that a narrow gauge railroad be constructed operating from the North Entrance to a convenient location at the north end of Grant Park. After some difficulties in securing the necessary franchises a company began the construction of a narrow gauge line from a terminal on Monroe Street east of Michigan Avenue to a point just north of the Shedd Aquarium. The road was completed and placed in operation June 24, 1933. The equipment consisted of 6 small gasoline engines and 42 cars, each with a seating capacity of 28 passengers. The one-way trip was made in about 3 minutes. This

railroad operated until October 9, when an injunction was obtained by the Attorney General of Illinois restraining further operation. During this period it carried in excess of 1,115,000 passengers.

With the tremendous growth in automobile traffic in the two decades preceding the Fair, it was obvious that the private car would bring a large number of out-of-town visitors to the Exposition. Preparations for this traffic included the marking of a World's Fair Highway System, the development of information booths both on the highway and in the city itself, the construction of tourist camps, the creation of parking areas near the entrances to the Fair, provision for traffic control in the vicinity of the grounds, establishment of automobile unloading zones at the Exposition entrances, and the publication of an official automobile map showing all the facilities for the automobile tourist. Practically all of these were accomplished by outside organizations, either at the request of the Fair or with its cooperation.

Contacts were maintained with the Railroad Passenger Traffic Associations for more than a year before the opening of the Fair. These associations granted extremely favorable rates. In addition to the general excursion rates, many special week-end excursions were run. During the summer months as many as 20 sections of a World's Fair excursion would arrive on a single railroad in one day.

Freight Traffic

The working out of reasonable rates for the shipping of goods and terminal handling of exhibits was a major task. After much correspondence and many conferences, reductions varying from twenty-five to fifty percent were obtained from 107 steamship lines operating between the United States and foreign countries. Conferences with railroad freight handling groups resulted in the assurance that the Exposition would receive the free return privileges on exhibits. In addition the Chicago rate on incoming exhibits was obtained and a number of railroads agreed to absorb the switching charges on outgoing shipments.

With the larger transfer companies the contract entered into gave rates as low as 7 cents per 100 pounds to exhibitors for hauling from switch tracks to the building entrances. The maximum charge for trucking from points in the city of Chicago and delivery to the exhibits booths in the buildings was 16½ cents a hundred-weight. In addition bids were obtained covering the customs brokerage and freight forwarding service. These arrangements made it possible for exhibitors to compute exactly the cost of transporting their exhibits from the point of origin to their resting place in the Fair.

A freight house 300 by 25 feet was constructed along a siding at the south end of the grounds. Seventeen thousand feet of tracks, the majority of which were south of the Travel and Transport Building, were made available for incoming shipments. During the active period before the opening of the Exposition, all available track space was in use and 4698 cars were switched in before the opening of the Fair. During the operating period of the Fair, about four

cars daily were required to handle the incidental shipments and the removal of rubbish from the grounds.

With the advent of the operating period, deliveries of freight and all vehicular traffic except for emergencies were stopped when visitors were on the grounds. Midnight found long lines of trucks and cars outside the entrances. From then until early morning all supplies must be delivered and all signs of the freight traffic obliterated by the clean-up forces.

Visitor Accommodations

For many months, serious consideration was given to the questions which would arise in supplying housing for out-of-town visitors. Meetings of hotel representatives, religious groups, social agencies, and associations of commerce were held on the subject. The Association of Commerce published a list of accommodations and prices in sixty hotels. This listing served as a standard for all others who let rooms and facilities. Be it said to their lasting credit that the hotels and rooming houses abided by these standards and only minor complaints were heard of either prices or accommodations. A committee from the various associations handled all requests concerning places to sleep and rest and Chicago's reputation for friendliness and cordiality to strangers grew apace.

The Pass System

It is unlikely that any system of passes ever devised was suitable for everyone. Their histories indicate that the subject was a sore one for previous fairs, not only creating grief for the management but calling for consummate diplomacy in its handling. Fortified by four years of experience with pre-fair passes and bulwarked by a requirement of the gold note trust indenture that passes be confined to specific business requirements, the Secretary, to whom pass planning was assigned, took up his duties. Patrick J. Byrne was qualified by his native endowments and by his previous experience in various phases of the Fair preparation work, to assume this responsibility.

No passes were issued as favors. To discourage any padding of pass lists, exhibitors and concessionaires were charged for their workman passes, and heavy fines were imposed for loss of passes, or for failure to turn in passes of discharged employees. Passes in plenty must be issued to everyone who has a right to them. But the question of who has a right to them is sometimes difficult to decide. Many a project has been in serious difficulty because of failure to extend these courtesies, and many a one has found itself embarrassed because of unwarranted liberality in their issuance.

In 1933, 543,571 passes were issued, and during 1934, 372,477 passes. Many of these, especially of employees, exhibitors, concessionaires and their aides, were used daily, as were also many service passes, newspaper, radio and business passes. Over 2,000 De Luxe annual passes were issued to founder members, sustaining members, guarantors of gold notes, members of the Board of Trustees, South Park Commissioners and other public officials whose offices entitled them to this

class of pass. This included officials of the United States Government, the Government of the State of Illinois, Cook County and the City of Chicago. The press passes included season passes, monthly passes, 60 admission, short term and single admission passes and were generously distributed. Visiting newspaper men from all over the country were given the courtesy of free admission and a large number of tickets went to radio, magazine and trade paper representatives. Many single admissions were issued on special days for groups taking part in entertainment.

The 1933 experience indicated only one important change in the handling of passes during the 1934 season and that was the establishment of a press courtesy office at the gate to take care of the increased number of newspaper men visiting the grounds.

Fire Protection

Early in 1932, when construction began to spiral sharply upward, the Exposition's own fire protection unit came into being, with two companies, one a hook and ladder, the other a pumper. A former deputy fire chief of Chicago headed the unit which was drafted from the Fire Insurance Patrol and the Chicago Board of Underwriters. Within a month, new and heavier apparatus was obtained and eighteen additional men, including a Captain and a Lieutenant were added.

The congestion soon arising from completing construction on the Island and on the Midway, from the increase in the number of workmen of all sorts and from the installation of elaborate exhibits, necessitated an added measure of fire protection. To supplement the main station, two smaller stations were built, one on Northerly Island immediately south of the east Sky-ride tower, and one on the Midway.

The cooperation of the Chicago Fire Department was most important. For their responses, the Fair grounds were divided into twelve zones and a fire alarm box was indicated for each zone. When any fire call was received at the city alarm office the corresponding number was sent out to the whole Chicago Fire Department and the company units responded just as though the box was actually in existence. This system was referred to in the Chicago Fire Department as "phantom boxes."

To this excellent system and administration may be credited the fact that there were no serious fires on the Fair Grounds. Although a total of a hundred and four alarms and special duty calls were received during the Fair period of 1933, all but three might fairly be termed incipient. The damage done in the remaining three amounted in all to less than four thousand dollars. The causes of fires and alarms were much as would be found in any city paralleling the size of A Century of Progress—cigarettes, defective flues, electric wiring and over-heated motors, explosion of gasoline vapors, ignition of combustible material by open flame, ignition of motion picture films and fireworks. There was no damage to persons in any of these fires, and no damage to buildings that could not be repaired almost immediately.

The Public's Health

An essential where groups of people gather in large numbers, is provision for their health and well-being.

Favored with the presence, on the Board of Trustees, of the renowned physician, Dr. William A. Pusey, and, on the staff, of Dr. Eben J. Carey, Dean of the Medical School of Marquette University, there was never a time when the exposition's mind was not attuned to the inherent need for careful attention to the health of the public. Dr. Herman Bundesen, director of Chicago's Public Health Service, became the third member of the triumvirate that so ably guided the exposition in these matters. The health program began at home with the employees of the Exposition and was then extended to exhibitors and concessionaires. Two types of physical examinations were required of employees and were given without cost. One was a general examination for control of communicable disease, the other a special examination for those engaging in certain types of work such as food handling and care of children. All workers were required to be vaccinated against smallpox, and they were subject to re-examination after every absence of forty-eight hours or more, due to illness, before returning to work. The Director of Health at his discretion accepted a statement in writing from the United States Public Health Service setting forth the results of a physical examination made by that service of recent arrivals from foreign countries, in lieu of requiring a physical examination. This applied to workmen on the foreign villages.

Great care was taken in connection with all handling of food. It was required that any person so engaged report contagious or suspected contagious diseases in his own home, and he was excluded from his work until permitted to do so by the health authorities.

Every building plan had the approval of the Public Health Engineering Bureau of the Chicago Board of Health. Modern ventilation systems were installed to avoid bad air conditions. Lighting was so arranged as to give the minimum eye fatigue. Every sewer and water pipe was checked over in detail before permission was given to dig the first ditch. The chlorination of the drinking water to make it safe for consumption, and the designing of the sewer system to prevent any sewage from reaching the lake or the lagoon were required.

Inspections of restaurants and stands selling food and drink were made daily by a staff of four qualified inspectors from the Bureau of Foods of the Chicago Board of Health, whose duties were to test refrigerators for proper temperatures, to test the quality of food served and even to subject the lowly dishwater to a test for sufficient chlorine disinfectant. Other officials roamed the grounds at regular intervals, interested in garbage, flies, mosquitoes, rats, and insects.

The Exposition owes a deep debt of gratitude to Dr. Bundesen for his high professional standards and his unflinching interest in its health problems.

The receiving hospital operated by the insurance companies, subject to Exposition rules, was completely equipped for the handling of emergency cases. Patients requiring further treatment were promptly transferred to local hospitals.

There were three ambulances in attendance; one stationed at the hospital, one on the Midway and one on the Island. The latter two were connected with the hospital by direct telephone lines. No first aid treatment was furnished except by the ambulance surgeons or in the hospital itself. Four doctors were on day duty and two on night duty. Three nurses were always on duty. No cases were kept overnight.

Travelers' Aid

A leaf was taken from the experience of the railroad stations in affording assistance to visitors in difficulty through separation from friends and relatives, or through unexpected circumstances such as loss of funds or bad news from home. A proposal of the Travelers' Aid Society to operate a branch on the grounds was accepted, thus emphasizing once more the basic policy to avoid setting up special exposition agencies where one already existed which had had superior experience in dealing with the problem under consideration.

The Exposition provided in a central location the space, furniture and necessary telephone service. The Travelers' Aid furnished the essential supplies and maintained a staff of seven workers on two shifts, providing regular daily service from eight thirty in the morning until midnight, and sometimes until as late as three or four in the morning. On peak days, in addition to the regular workers, a volunteer staff of from four to sixteen persons was required.

The total number of individuals assisted through this agency during 1933 was about fifteen thousand. Of these more than eight thousand were children lost in the crowds, who were reunited with distracted parents on the grounds or returned to their homes in the city. The expected ingenuity of American children was manifest in frequent presentations of themselves as lost when, in reality they had come to the fair alone, then spent their fare home after discovering that the Travelers' Aid would send them home in the police patrol at midnight. This attractive activity stopped after some irate parents were required to come to the grounds and collect their mendacious offspring. In the cases of runaways from other cities, shelter and care were arranged until provision could be made for their safe return home. An almost equal number of adults appealed to the Travelers' Aid for assistance in locating relatives and friends from whom they had become separated.

In addition to separations, other problems brought to this office were sudden illness, mental disturbances, physical handicaps, inadequate funds, and the loss of pocketbooks. The more serious problems requiring actual "case work" were referred to the Travelers' Aid Central office to be handled in their regular routine. About one hundred such cases arose during the summer.

Information Booths

Nor was the Travelers' Aid the only office that received questions. Exposition visitors are notorious for their inquiring minds and for their inability to find their way around the grounds. Shortly before the Fair opened, an information counter with one attendant was established in the Administration Building; a telephone

information service to which all information calls were switched was inaugurated; plans were begun for the establishment of information booths throughout the grounds; uniforms for these booth attendants were selected and ordered; and information relative to the Exposition was compiled in book form for the use of these attendants.

When the Exposition opened thirty-two of these information booths were in operation—sixteen on the grounds and sixteen inside the buildings. As soon as the guides and other personnel became proficient in the question-answering, all but three of the building booths were found unnecessary and were withdrawn.

Surveys indicated that about a thousand visitors were serviced weekly from an average booth. The largest number of questions concerned the locations of toilets, buildings, and exhibits in that order, with many inquiries concerning the city itself. Of course, there were the never-failing, fantastic, absurd, but seriously put queries, such as: "When do they feed the lagoons?" "When will the Wings of a Century fly?" "I read that the light from the star Arcturus set the Fair ablaze. Where was the fire?"

An added duty assigned to the Information Section at the opening of the Exposition was the operation of the Lost and Found Service. Lost articles were taken directly to an office in the General Exhibits Building or to the nearest information booth. When articles were turned in at the latter place, a ticket was made out in triplicate, the original and duplicate being sent with the article by regular grounds messenger service and the third copy given to the finder. Of the seven thousand articles turned in about one third were reclaimed by their owners. After the close of the Exposition, the articles remaining on hand were turned over to the Salvation Army.

Guides

Even before the opening period, a variety of needs presented themselves in creating an orderly, well-behaved fairgrounds. In the early days, the Works Department was responsible for the watch service in buildings under construction because most of the watchmen belonged to the contractors. As buildings were turned over to the Exposition, it must establish its own watch service; as the construction area grew in extent, coordination among the watch services became necessary. These requirements were met with the creation of a motorized night patrol which covered the entire grounds and looked out for prowlers and fires, the two chief adversaries of buildings under construction. As soon as pre-fair openings occurred the number of gatemen was increased, and guides were needed to conduct the sightseers. At this point, these men, and the already established watch service in both buildings and grounds were merged into one public protection unit and placed under the administration of the Operations Department.

With the installation of exhibits in the various buildings, some exhibitors required special guard service during the night hours and a clear distinction was made between this type of guard duty and all others. The building watch service was turned over to the Pinkerton National Detective Agency, and remained there

until the exposition was finally closed.

To make the grounds safe, comfortable, and pleasant for every visitor was a vital matter, for within the grounds would be found a large group of strangers who must be made to feel especially welcome. A large proportion of this crowd would come considerable distances and would be receiving its impression not only of the Fair but of the City of Chicago. Again, expositions, county fairs, carnival shows, all are happy hunting grounds for pickpockets, shortchange artists and confidence men.

The guide service, under the able direction of Major Robert Wigglesworth, made an indelible impression on opening day visitors for courtesy and competence, a reputation this force carried with it throughout the entire operating period. This was no accident. In the beginning, unusual care had been exercised to employ young men who would be able to meet emergencies, who were resourceful in meeting visitor needs, and who had the judgment to do a job with a minimum of instructions and fuss. To find them, special tests were arranged by the Institute of Juvenile Research. Each must be five feet ten inches or taller, pass a strict physical examination, have a satisfactory I.Q., a high school education, and be of good general appearance without noticeable physical defects.

To find out whether these young men had other characteristics so necessary in handling public events, the applicants were subjected to a grueling examination and ordeal. Those who survived got the jobs. Among the many questions asked two are characteristic. A list of fifty prominent names was given with a blank opposite each. The applicants were told to indicate whether these were statesmen, actors, athletes, musicians, or leading industrialists. It was not contemplated that any applicant would be familiar with all the names in such diverse groups, and the scoring of this question was done on the basis of two credits for each one right and four credits deducted for each mistake. It was in no sense an intelligence test, but rather a method of determining whether he had the courage to admit that he did not know. It was important to the Exposition that guides should not give false information to visitors asking questions merely to hide their ignorance. If the applicant passed other portions of the examination successfully, but failed in this one, the trait evidenced here was explained to him, and he was cautioned to avoid it.

Another question was a series of ten rather simple problems in arithmetic. During this test absolute quiet reigned in the examination room. Later another set of ten questions was given which appeared identical with the first, but which had slight differences. During the period for answering this second set of questions, every distraction conceivable went on in the room. A radio was turned on full blast, men ran through the room at intervals ringing bells, knocking against tables and chairs or letting out fiendish yells. The purpose of this test obviously was to determine not only a man's powers of concentration, but particularly how much more accurately his mind would function under normal conditions than amid a bedlam of confusion. This was important because it was possible that the guides would frequently be subjected to the most stressing circumstances. Per-

haps simultaneously one visitor would be complaining about some real or fancied fault while another was asking why the buildings were painted in such "funny colors," and a frantic mother clutching at the arm of the guide would be demanding the return of her lost child. The usefulness of this test was amply proven in that it permitted the elimination of a large number of applicants who were temperamentally unfitted for the position.

Before the opening day the grounds and buildings had been divided into four major areas in which four guide companies had been organized to operate. The Chief of the Guide section selected as company commanders men who had had considerable military experience and were accustomed to positions of command. The headquarters staff consisted of an executive officer, adjutant, personnel officer, quartermaster, and a lieutenant in charge of the night detail. It was also found advisable to establish a Lagoon Patrol, with a personnel of fifteen men. Ten of these men were picked from the guide force for their life-saving qualifications, and the other men were experienced mechanics on out-board motors. The duties of the Lagoon Patrol consisted mainly of patrolling the Lagoon and functioning at events such as the outboard motor races, the Venetian Night festivals, fire works, baby doll parades, swimming races, and other events on the water front.

While the exhibits were being installed and concession stands and buildings erected, it was necessary to employ about 1700 guides to direct traffic, protect property and help clear the grounds of the huge number of job seekers and stragglers. This number was not needed after the opening of the Exposition, as the police and regular watchmen took over their special duties and the gate personnel cared for the incoming crowds. During the period of the two Fairs the guides were placed where their especial training and experience would make them the most valuable. Those who had majored in or who had received degrees in medicine, physics, geology, chemistry and other sciences were assigned to the Basic Science Division in the Hall of Science, where they not only performed the regular duties of guides but often gave lectures and explained scientific exhibits to visitors. Eight were assigned to the Maya Temple and given information as to the exhibits therein and the history of the famous old Temple which had been reproduced. Ten guides, uniformed as wooden soldiers, were sent to the Enchanted Island where they added much to the color and to the delight of the children. Among these young men thirteen foreign languages were spoken. One hundred thirty-three colleges in nearly every state of the Union and in five foreign countries had helped to educate them.

The Police

Since the exposition was located on state park land, the law required the selection of all police officers from the Illinois police civil service list. These men had already passed the physical and mental examinations given the park police. However, the same aptitude tests were applied to them as to the guides. They wore tropical-weight, regulation, open British jackets, of red whipcord; full length black trousers with yellow stripes on the sides; Sam Brown belts; regulation .38 Colt re-

volvers with five inch barrels; blue swagger sticks; white pith helmets with chin straps; light blue shirts and blue ties. Their stars were the regulation six-pointed stars bearing the official emblem of A Century of Progress.

Plain clothes men were always on duty. Many of these men were seasoned operators, some of them knew every pickpocket and other petty criminal by sight, and arrested them as they attempted to enter the gates. Policewomen were used to make daily investigations of the facilities provided for the convenience of the public, to watch for pickpockets in women's dressing rooms and for morons. They were not in uniform, and, as their identity was not known, they worked very effectively.

An Investigation Section was set up to act as liaison for the legal department. The investigators worked in close cooperation with the men assigned to the Fair Grounds by the Chicago Chief of Detectives, and with the federal agencies for crime prevention. Their first concern was to keep the fair free of crooked games and gambling. It was not enough however to eliminate such annoyances; a constant watch had to be kept to be sure that such misdemeanors did not recur and that shows were within bounds of propriety.

Another problem was to keep the grounds as free as possible of intoxicating liquor. Here the investigators worked in close conjunction with the Bureau of Prohibition Enforcement of the Department of Justice. It must be remembered that this was in 1933 before the repeal of the Eighteenth Amendment, so that trespassers were not only liable to local authorities but to Federal authorities as well.

The Investigation Section could not confine itself to things that occurred within the grounds. Frequently its duties took it outside, into the very heart of Chicago itself. For example, complaints were received from stores throughout the city that they had been victimized by counterfeit pay-roll checks drawn on the accounts of various concessionaires. To permit such excursions outside the grounds, the Sheriff of Cook County deputized the investigators. The hunt for these malefactors was long and tedious, but they were generally apprehended, tried and convicted.

Depriving a citizen of his freedom is a serious matter and severe qualms were entertained over the prospect of having several hundred rookies, without any real background of police experience in a position to take such drastic action. The regular South Park Police Department gave the Fair the answer to this problem. Capt. Robert E. Redd, an officer with many years of outstanding service to his credit, was detailed to the exposition as its Chief of Police. With him, the Park assigned twelve other veteran officers. These twelve were placed in command of the several police stations about the grounds, with Capt. Redd to coordinate and direct them. It was then possible to instruct all grounds police to bring to the nearest station anyone suspected of crime or misdemeanor and never to place him under formal arrest on the spot. Upon arrival at the station, it was the regular officer who decided, in the wisdom of his experience, whether to arrest the offender or whether to reprimand him for misbehavior and send him on his way,

sometimes within and sometimes without the grounds. This procedure, and its wholehearted acceptance by the force, probably accounts for the fact that no suit was ever brought against A Century of Progress for false arrest.

It was also debated whether the rookie patrolmen should be permitted to carry arms for the same reasons they were not permitted to make arrests. Here, the decision was an affirmative, because no man should be placed in a spot where his life may be endangered by his assignment, without being given positive means of defending himself.

Through the entire period of the 1933 Fair only two hundred and twenty-eight arrests were made, and this in spite of the fact that in addition to the thousands of employees and exhibitors, more than 22,500,000 visitors passed through the gates that year. Offenders were not detained at the World's Fair station. As soon as they were booked and questioned they were immediately taken to Chicago Police Headquarters at 1121 South State Street to await proper hearing.

Gate Operation

It was especially needful for the gates to function smoothly, even though by their very nature they were inherently and always potential trouble spots. Here, the drunks and rowdies must be turned away; here the counterfeit money must be recognized and those passing it taken to the police station; here, must be refused entrance to the dogs, monkeys, and cats which sometimes accompanied their owners; here, the tickets must be purchased, taken, and the turnstiles kept clicking; here, the passes must be scrutinized and their holders diplomatically screened; here, must be received a vast host of distinguished guests, emergency crews, business guests, and employees; not to mention thousands of plain visitors. It was here that those who came received their first and often their lasting impression of the entire exposition.

Three departments worked at the gates—the police, guides, and information booths were part of the Operations Department; the cashiers, ticket takers, and bank personnel reported to the Comptroller's Department; the passes were handled by the Secretary's Office. Supervisors from each of the three were not enough. Often, things happened quickly, perhaps policies were involved or departmental interests conflicted. To coordinate forces into a facile team, the Operations supervisor was placed in command and made responsible for the entire gate operation.

Area Operations

As was to be expected, the organizational problem of operating the grounds was the most difficult faced. The reason for this lay in the nature of the task itself. Each department had business in the grounds operation and yet little of it could be attended to without stepping on the rights of other departments. Besides, it was the departments other than Operations that had the background of building, exhibit, and concession history. After grave consideration of the possible methods of organizing the grounds operation, it was decided to make good men do what theoretical organization chart could not. As the construction ended, the workmen

became maintenance crews and the engineers and construction superintendents were drafted into the Operations Department to hold key places where their previous exposition experience was valuable. When the exhibits and concessions preparations were past their peak, the men and women from those departments went into operations.

For the operating period, the grounds were divided into nine areas with a headquarters office in each area. The personnel mentioned above were attached to those areas in the capacity of area chiefs and assistant chiefs, so that the headquarters were covered 24 hours every day. For administrative purposes, the area chiefs reported to the Director of Operations; for policy purposes they turned to the director of whatever department or departments were concerned with the matter that was in hand. Through the area offices cleared all matters concerning operation of exhibit and concessions in the areas, with the police, the guides, the watch, and the maintenance personnel performing as service units. The contributions of these area offices to smoothness of operation was great indeed.

Night Time

Operations both picturesque and grubby were those that occurred behind the scenes and at night. At ten o'clock the buildings closed their doors and janitors moved in. The visitors poured out into the walks and streets and most of them, happy but foot-sore, found their way to the exit gates. Some of the gayer ones joined the crowds in the Midway areas. At midnight the entrance turnstiles were silenced, the ticket booths were closed and the cashiers, firmly grasping their little black bags, departed for the nearest bank. For most of the visitors the day was over, but for half of the Fair personnel it had just begun. What happens between midnight and reveille? Plenty.

On the stroke of midnight, trucks and automobiles began to rumble through the gates bringing the supplies for the next day's activities. Concessions began to close and begin on their night work of cleaning up and putting things in order. The night clubs and amusement places kept going with diminishing crowds until 2 o'clock. Then they too closed their doors and the late revellers straggled into the streets. By two thirty in the morning, the grounds were practically free of visitors and work for the night crews picked up momentum. A few eating places remained open all night so that night workers could get sandwiches and coffee. The street lights were kept on all night. The decorative lighting had been shut off gradually and building exteriors darkened. Landscaping crews would be busy cutting and watering grass and replanting flower arrangements, repair crews would be touching up worn paint, replacing lamp bulbs and tattered flags, while electricians and plumbers went from trouble to trouble that had been reported during the day. Inspectors stalked for hazards of fire and disease.

Street crews were busy cleaning up the litter which the day's crowd had scattered everywhere. Trains of Mercury trailers rattled along the almost deserted streets and trailers were dropped here and there to be filled with refuse by concessionaires. Crates for paper collections were left at convenient points. All night

long Greyhound busses passed through the grounds along Leif Eriksen Drive for the convenience of the night workers and employees of concessionaires and exhibitors who had work to do in their places before sun-up.

Around the grounds, the regional banks were busy drawing up the totals of the day's take and preparing it for Brink's express pickup in the early dawn. In the Hall of Science, the ticket custodian was readying tomorrow's tickets for issuance to their selling points next morning; the tickets for the day just past were being shredded and baled for sale as waste paper, and the laundry was working at full blast to have personnel looking trim for another day.

In the Administration Building, the dining room was running full blast; the Publicity Department newsroom was grinding out releases for tomorrow's papers and for broadcasting; the accountants and auditors were making up the daily statements; the assistant directors of Operations and the General Manager's administrative assistant were swapping reports of the day and planning the routine of the morrow.

The red-coated policemen continued their all-night patrol, though the plain clothesmen's duties were over when the concessions had closed and the last visitor had made his way to the outer world. In the exhibit buildings the night shift kept watch for unauthorized people in the buildings. The streets were washed clean by pressure sweepers.

Morning came up over the Lake. The Avenue of Flags waved a gay colored welcome to the visitors of each new day—a day fresh and clean, a day with new beauty and delight.

Special Events

A little orange-colored ray of starlight completed a forty-year journey and turned on the lights for A Century of Progress. It had started from the star Arcturus during the first Chicago world's fair in 1893 and traveled through the years down to the earth at an even speed of six hundred and seventy million miles an hour.

Arcturus, one of the most neighborly of the stars—two hundred and twenty-five million million miles away, contributed the most spectacular, dramatic opening that any world's fair ever has known. A Century of Progress was stressing science, its development and achievements. Science was the very heart and core of Chicago's second World's Fair, so it was altogether fitting that it should be opened by a scientific triumph.

The world's largest telescope, which had been on exhibition at the Columbian Exposition, was moved at the end of that fair to the Yerkes Observatory at Williams Bay, Wisconsin. The borrowed light from Arcturus which had been sending out its light for thousands of millions of years, was caught by this telescope and focused on a photo-electric cell which furnished the current necessary to turn on the illumination for the entire grounds.

Two eastern observatories and one in the middle-west were asked to co-operate with Yerkes the night of the Fair opening, to eliminate the possibility of inter-

ference with the starlight from massing clouds or other sky disturbances. It was not possible to use any western observatory, because darkness came too late to the west. In the courtway of the Hall of Science at twilight a great hushed crowd waited, watching the large illuminated panel that towered above the rostrum. The lower half was a map of the eastern part of the United States showing the four observatories. The upper half contained the instruments that closed the circuit.

"Harvard, are you ready?"

"Yes."

A red glow ran across the map from Cambridge to Chicago.

"Is Allegheny ready?"

"Ready."

"Illinois ready?"

"Yes."

"Yerkes?"

"Let's go."

In the center of the flaming circle a star flashed out. The switch was thrown, and a searchlight at the top of the Hall of Science shot a great white beam across the sky. It circled slowly from one exposition building to another and, at the touch of its finger, one after another burst into full brilliant illumination.

The lighting from Arcturus was the first special event.

Following the opening of the Fair, special days and events crowded the calendar closely. From a canoe regatta to a salute of twenty-one guns for the President of the United States; from a boys' marble tournament to the spectacular arrival of General Italo Balbo and his Italian air armada at the end of their flight direct from Italy to the Fair, the exposition ran the gamut of interest with accented events and persons through the summer and fall months of 1933 and 1934.

Days were set aside for foreign nations and their American born children; for the states of the Union and its territories; for special events of dramatic, picturesque or especial importance; and for persons of distinction.

Foreign countries, between twenty and twenty-five in number, each celebrated a day of its own in both Fair periods with music, folk dancing and addresses by speakers, frequently their ambassadors. The nations represented changed little from one Fair to the next. The folk dancing proved so popular that in 1934 the Nationality Strollers were organized. Groups of from fifteen to fifty dancers in the native costumes of fourteen nationalities strolled through the grounds daily, dancing, singing, and playing small instruments.

On August 7, 1934, six hundred and seventy-five people representing twenty-six nationalities, marched in costume down the Avenue of Flags to the Hall of Science and were taken to various villages and concessions on the grounds to give programs of music and dancing. Other parades of costumed entertainers contributed their bit of carnival color to the "streets" of the Fair.

In these as in other events, the Illinois Host House played an important part as the welcoming center for Illinois. Here were entertained guests from all over the country. Not only were formal receptions held for visiting dignitaries with

local and state officials and other eminent citizens aiding in the hospitality, but there was always a note of greeting for the many strangers who came, sometimes in small groups and sometimes singly. Aside from its pleasant and widely welcoming doors, it contained interesting Illinois exhibits, chief of which was the Lincoln Room. The soft blue and white of the rotunda, the buff and mauve coloring of the spacious lounge with its commodious chairs and divans, its bowls of fresh flowers, the Governor's room in which committee meetings were held, all contributed to the air of simplicity and friendliness which was the keynote of this building.

Several times the Presidential salvo of twenty-one guns was fired. For President Roosevelt, who visited the Fair on October 2, 1933, for ex-President Hoover, who attended with Mrs. Hoover, and Postmaster General James A. Farley when he represented the President at the opening of the Fair. Many other distinguished guests were entertained. Among them were cabinet officers and other statesmen, personal representatives of foreign powers, members of royal families, diplomats, explorers, scientists, and movie stars of the first magnitude and noted military men. Mrs. Franklin D. Roosevelt was an honored guest, on July 9, 1934. Mrs. Frances Perkins and Mrs. Ruth Bryan Owen had the distinction of being the first women to be honored by a salute of guns.

Guglielmo Marconi was one of the distinguished guests to whom a day of his own was given. He was the honored guest of American Legionnaires, scientific societies, and Italian organizations. Alfred E. Smith was honored by a day of his own.

Sports events were important on the programs of both Fairs. They included national outboard motorboat, rowing, and canoeing regattas; swimming and field meets; water polo, football, archery, baseball, basketball; bicycle and boat races, chess games with human chessmen; and a wild west rodeo.

Several beautiful, colorful Venetian carnivals were given on the lagoons. The floating theater of the first Fair was anchored for the second one, having a steady stage constructed on piles, with band shell and dressing rooms. This Lagoon Theater was devoted almost entirely to professional entertainment, while the Science Theater in the Court of the Hall of Science was used only for scientific demonstrations.

The Court of States Theater in the Court of the Hall of States handled practically all types of entertainment not belonging to the Lagoon or Science Theaters. The stage level was about four feet above the ground so that the performances could be seen from all the seats in the court and from the balconies of the states building.

The All-States Round-Up was presented at intervals during the last month of the Fair. It was made up of a variety of acts by members of the staffs of the different state exhibits and was organized by the Federal and States Participation Division of the Department of Scientific and Governmental Exhibits.

Special events in a Fair constitute such an ambitious program in giving it

light and color that it is inevitable that many hands touch it. So it was at a Century of Progress. Out of those who molded the special events none shone more brightly than John A. Reilly.

Music

Art and music at A Century of Progress were entertaining, educational, and highly inspirational. They gave an account of themselves, not only for the century, but from early chanting and primitive sketching, that never before was achieved at any world's fair, and set a measure for expositions to come.

Art came to the Fair in such a valuable collection that it was necessary to house it in a more permanent building than was financially possible to A Century of Progress, and the offer from the Art Institute of space and care was accepted gladly.

Music played a diversified obligato to all the life of the Fair. From the world's greatest symphonies to the newest slanged syncopation; from old violins to young voices, there was music everywhere. Music to please the scholarly musician and the man in the street who recognizes the Star Spangled Banner only because people stand up.

Bands and symphony orchestras offered the most spectacular in music. The United States Marine Band came from Washington by special permission of the President, and its two concerts a day drew large listening crowds in addition to those who went their sight-seeing way conscious of the accompaniment of a great band.

Between the finished musicianship and long tradition of the United States Marine Band, and the sauciest, most obviously rhythmic little aggregation on the grounds, hundreds of bands filled the air with music. Well-known bands gave serious concerts. High school and college bands did their enthusiastic bits. Little foreign bands emerged from villages and played about. Oriental instruments gave forth music unfamiliar to western ears. The brass bands kept vivid the carnival spirit of the Fair. They would not let anyone forget.

The famous Tipica Police Band of Mexico City that played at all official functions in the Mexican capital, was the star attraction when it made a special visit to the Fair. Its fifty-five musicians with string and brass instruments and the marimba, attired in their picturesque charros costumes played Mexican music. They brought with them a troupe of singers and dancers.

A marimba band of one hundred pieces was assembled especially for the Century of Progress.

The great march king, John Philip Sousa wrote "The Century of Progress March," especially for the Fair.

The proud accomplishment of Chicago's 1893 Fair in offering music by a marvelous symphony orchestra was doubled by the forty-year later Fair. The Theodore Thomas Orchestra, afterward the Chicago Symphony, played through the World's Columbian Exposition. During the summer of 1934 at A Century of Progress, the Chicago Symphony and the Detroit Symphony Orchestras each gave

two concerts daily on the grounds of the Swift and Ford Motors exhibits. They were led by their own conductors and for several short engagements by famous guest conductors. People stood in quiet crowds at the back of the amphitheater waiting for seats. They sat uncomplainingly under a hot sun, held umbrellas against light rains, and sometimes waited patiently through the intermission between the afternoon and evening concerts to hold their seats.

Choruses were heard in great numbers; professional groups with hundreds of members, amateur choruses, school choruses. Community sings were sponsored by different organizations in the court of the Hall of Science, where crowds lifted their voices in popular songs. Choirs sang hymns and anthems, and organ recitals were given in Meditation Chapel in the Hall of Religion.

Music festivals made valuable and attractive contributions to the music of the Fair. They brought to their gala days symphony orchestras, string ensembles; band, fife, drum, and bugle corps; organ recitals, A Capella choruses, choirs, settlement and school music groups of all kinds. The Illinois Federation of Music Clubs, at its Autumn Festival and Conference in October, 1933, celebrated a "Home Coming Week," having been organized forty years before, at the time of the World's Columbian Exposition in response to a suddenly recognized need.

The carillon in the Hall of Science Tower known as the Deegan Chimes rang out its concerts from bells that were tubular instead of flaring. The advantage of a tubular bell is that it all vibrates, instead of only the rim, and one bell weighing eight hundred pounds makes as much noise as a flaring bell weighing three thousand. The longest of the tubes was twelve and a half feet; the shortest, six. They could be played electrically or by key-board.

The Real Hosts

No phase of an exposition's activities is more important than ground operations. The public is keenly aware of details which irritate them or which cause inconvenience. Gorgeous spectacles, thrilling shows, and beautiful surroundings are forgotten when the visitor has a lost child, blistered feet, or is given wrong directions. Visitors seldom have the opportunity to meet the top Fair executives. Their real hosts are the guides, the police, and exhibit and concession attendants. Courtesy and helpfulness on the part of these does as much as the spectacle itself to make a happy day and pleasant recollections. There is a multitude of detail in the routine of operation, but none is as important to the public appreciation of the Fair as the personal courtesies and attention which they receive.

REVENUE CONTROL

When a Fair visitor handed a dime to a concessionaire, there was little realization that during the day several hundred thousand other people would be doing the same thing, not once but a dozen times. In the course of a single day, millions of individual transactions would be accomplished, all of which must be properly accounted for and the proceeds safely handled. Tomorrow would be a new day and all the loose ends of the preceding day had to be gathered and cleared, so that the next cycle could be started with a clean slate.

It is one thing to count thousand dollar bills and quite another to account for a half million dollars in small change weighing over three tons. To further complicate the money traffic, hundreds of revenue points were scattered over a vast area. How this money was collected, guarded, transported and accounted for, is only one phase of the task that confronted the finance offices of the Exposition.

The Exposition engaged in almost every kind of business, even in the early days. Collecting the \$5.00 memberships and recording them; every imaginable type of construction contract; a huge insurance project; the various trust accounts for buildings and other purposes; the engagement of the exposition itself in the restaurant business, a shoe shine parlor, a pageant, a sky-ride, a nursery; and a wide range of concession financial arrangements all worked together to present an intricate pattern for the comptroller and treasurer to direct.

Mr. Arthur Andersen served the Exposition as its Comptroller from the very beginning of the organization until resigning due to ill health December 1930. But his influence did not stop here, for it was his guiding genius that steered

the Department through its entire life. His great contributions to the Fair were his wise counsels, his common sense, and his expert technical knowledge. The early functions of the Comptroller's Department were performed by members of the staff of Arthur Andersen & Co.; in the months following the Exposition's incorporation, these were replaced from time to time by employees of the Exposition.

Mr. George Woodruff was elected Treasurer on January 9, 1928 and served in this position throughout both Expositions. He took an active part in the affairs of the Executive Committee and as related elsewhere was the author of the financing plan.

Both these men carried heavy responsibilities in their own fields of endeavor and obviously the time came when it was needful to have the duties of their offices fully functioning in the Administration Building. Other fairs had organized the comptroller and treasurer functions in separate departments. For two reasons, they were combined at A Century of Progress. It was believed that a more economic and better coordinated set-up could be obtained. Further, the general economic outlook was such that it was necessary for the General Manager to assume many of the policy duties usually performed by the comptroller and treasurer. These phases have been related in discussing the financing of the exposition and its relation to budget control.

In August, 1930, Mr. Martin M. Tveter was engaged as Assistant Comptroller and was later appointed Comptroller, with the duty of directing both the comptroller and treasurer functions. The splendid record of this department was a direct reflection of his vigor and superior ability. As time went on, he was assisted in the comptroller functions by R. C. Otley and in the treasury functions by C. E. Brophy. These men gave devoted and unstinted attention to the manifold operations of the department.

Simplicity of Procedures Required

Earnest endeavor was made from the beginning to avoid having a money control system that was so complicated it might fall of its own weight under pressure. It was sought to develop a plan that made the Comptroller's Department one of the team rather than an authority set up to dictate and pass judgment upon other members of the organization. As each plan was proposed it was carefully measured. First came the question, "Does this call for spending a quarter to save a dime?" If it did, the plan was discarded and another searched out. The next question asked was whether a proposed plan put a burden of bookkeeping on other departments in addition to that in the Comptroller Department where it belonged.

An important measure of safety called for including several offices in every financial procedure on the theory that if it were necessary for several to participate, it lessened materially the chance for collusion in wrongdoing. The requisitioning department signed requests for materials and supplies of all sorts which were approved in the General Manager's Office. Purchases were made in the

General Service Department (later Operations) if for other than construction material, when they were handled in the Works Department, and were received by different people from the purchasers. The Comptroller's accounting division collected the paper work and checked it, and the treasury division paid it after receiving directly the vendor's statements. One further precaution was taken, the counter-signature on the checks was that of the technical assistant to the General Manager. While the procedure varied with purchasing a typewriter and contracting for landscaping, the basic principle was maintained.

The early activities in the Comptroller's Department consisted chiefly of recording transactions pertaining to the proceeds from sales of Founder, Sustaining and Legion Memberships, and disbursements relating to payrolls and miscellaneous expenses.

They were developed gradually to meet the expanding responsibilities in connection with the receipts from the sales of Guaranteed Gold Notes, exhibit space and concessions, construction and other disbursements, the recording of all forms of contracts, and the development of the system of revenue control to be used during the Exposition period.

The operating budget, described in the chapter on "Financing," was prepared in the office of the General Manager, but the Comptroller's office was called upon for numerous estimates, computations, statistical data and summaries of receipts and expenditures. Since the budget was changed at frequent intervals to meet rapidly changing circumstances, an unusual number of demands was made on the Comptroller's Department.

In addition to the general budget report, a daily cash statement was submitted to the General Manager for the control of construction. This statement showed the previous day's unallocated total of unexpended funds, the particular day's allotment of funds to particular construction projects, any additions to this unallocated fund from receipts of various kinds, and the balance remaining in the manager's reserve that could be allocated to construction.

As funds were appropriated for construction purposes, the entire amount allocated was immediately deducted from the available reserve so that the General Manager had before him a daily statement of all funds that could be used for further construction projects.

Paralleling the budget was a cash forecast covering a period of six months, setting forth the actual cash and probable available cash for the period, as well as the actual and probable commitments. It was used as the basis for studies on any expansion or contraction in the construction program established by the budget; but it was not permitted to supersede the policy "no commitments until cash on hand to pay them." This forecast was made every three months up to the opening day, and during the Fair period it included an estimate of the attendance, probable receipts from attendance and concessions, and operating expenses determined from the actual experiences of operation. During the operating period it gave the management the necessary information to provide adequately for the liquidation of the liabilities, including the Gold Note Issue.

Payments for construction work were made under the provisions of the Illinois Mechanics Lien Law. In addition, careful attention was given to the checking of all receipts of materials and supplies, including provision for the proper certification by both the foreman and general superintendent that the work called for under the contract had been performed in accordance with the original contract and its change orders.

Because the exhibit contracts were standardized, the collection and accounting of fees were normal financial procedures. It was not so with concessions accounting because of the variety of the services and entertainments covered. Not only was it necessary to do the Exposition's accounting for concessions but the Exposition must keep up the concessionaire's business as well because of the general agreement to let the concessionaire retire his investment before profit splitting between him and the Fair. To assure the complete integrity of a concession, as a matter of policy, the Exposition early decided it would collect all gross receipts obtained by concessionaires from the public, that it would bank such funds, and remit them to the concessionaires once each week, after deducting expenses charged against the concessionaires and the participation percentage due A Century of Progress.

During the summer of 1932 when the grounds were enclosed, a nominal admission was charged to see the Exposition in the making. Sixteen concessions were operating within the enclosure, ranging from restaurants to bus transportation, amusement rides, shows, and historical reproductions. It was during this period that the nucleus of revenue control key personnel received its baptism for the major operating years.

Also, this period provided a factual basis for estimates of the amount of revenue, the number of revenue points, the probable receipts from each and the participation of A Century of Progress in each concession—figures needed to plan the revenue control.

Operating Problems

The efficient handling of 2,000 revenue points—places where cashiers collected money—scattered over an area of approximately 338 acres, with the farthest being three and one-half miles from the Administration Building, was the nub of the problem. Because of the inaccessibility of some of the revenue points, the grounds were to be divided into districts, with a branch "bank" in each district through which all cashiers, collectors and others handling receipts from the gates and the concessionaires, would clear. This bank system simplified the problem of supplying over a thousand cashiers with change funds. Each cashier called for his own change fund and turned it in to the branch bank at the close of each day's business. During the day, collectors visited coin turnstiles and control points, picking up deposits and reporting back to their home banks with them.

With the decentralization of the "banks", really depositories for cash, it was necessary to provide some arrangement for safely transporting money between the main bank and the branch banks, as well as between the main bank and the banks in downtown Chicago where money was deposited. A contract was made with

Brink's Express Co. to maintain an armored truck on the Exposition grounds at all times together with a crew of armed guards.

Only once was there a hold-up scare. Rumor had it that an armed gang would hold up the main bank at ten that night. Flood lights were quickly mounted on top of the building, police with machine guns were strategically located. Then the newsmen and photographers were called in and all waited in suspense for several hours. To the relief of some, but keen disappointment of most, nothing happened. Perhaps the publicity scared them off.

As often as five times in twenty-four hours money was picked up and deposited in the safes, and turned over to the main bank in the Administration Building. The main bank recorded these collections, verified the money so collected and immediately prepared it for deposit with the banks in downtown Chicago. Deposits were made several times daily in the Chicago banks and in the event the banks were closed, Brink's would accept the money and deposit it in their vaults until the next morning. On some peak days the money taken in reached \$500,000.00 and an average of two and one-half tons of metal money was handled daily.

During 1933, a total of \$52,883,671.00 was handled, representing both cash receipts and change funds; in 1934, \$42,000,000.00, a total of nearly 95 million dollars for the two years. During 1933, the total discrepancy representing tellers' and collectors' shortages, losses by counterfeit and shortage claims in rolled silver and slugs, amounted to only \$1,173.80, and in 1934 this was reduced to the low sum of \$117.02.

A good organization is a self cleansing organization. It is almost impossible for top executives to detect small peculations, but fellow workers on the same level are quick to catch minor thieving. Where there is pride in an organization and self-respect among its employees, they will take action in their own hands and force a pilferer or cheater out, rather than report him to higher authority. Unexplained resignations from the staff were occasionally from this action. Where morale is high, morals are high.

Every cashier was required to attend a school of instruction where the art of detecting counterfeit money was taught, and booklets were furnished, giving complete information on every new counterfeit discovered. Cashiers were prohibited from changing a bill larger than \$20.00, the visitor being referred to one of the branch banks.

When presented with a suspected coin or bill, the cashier requested the patron to wait a few moments until adequate change could be obtained. The cashier then called the gate lieutenant who, in turn, notified the main bank, and an experienced bank teller immediately was dispatched to the scene. After the bank teller had satisfied himself that the bill was actually a counterfeit, he informed the patron that the bill would have to be taken up and turned over to the United States Secret Service Division. He gave the patron a receipt for the counterfeit bill. Of course, most persons presenting counterfeits were unaware that they were carrying them. This procedure often worked a hardship on the individual, and it was sometimes necessary to advance funds to enable the visitor to return home.

All money advanced in this manner was repaid in full.

The whole procedure required much discretion. The cashier was on the horns of the dilemma of either accusing an innocent person or of permitting a counterfeiter to escape. On one occasion, the Treasury Department had notified the Fair to be on the lookout for a certain counterfeit bill and accurately described the persons passing them. By one of those unexplainable coincidences, two persons exactly fitting the description endeavored to pass some questionable-looking bills. The over-zealous teller called the police and they were taken to the Fair police station. An expert from the Secret Service pronounced the bills genuine, but there were two irate visitors to be placated. All further arrests were left to government officers.

The Chief of the Chicago District of the Secret Service Division worked in close cooperation with Fair authorities.

In choosing young men and women for cashier service different characteristics were required from those needed for guide service. The cashiers, in addition to being scrupulously honest, had to be accurate, speedy and not easily rattled. As time went on new and unexpected duties fell upon this group; they often had to help out informally on information. The cashier had to be courteous and as well informed as possible, for it was the established policy of the Fair that all visitors, at all times, should be given every possible assistance.

It was indeed not unusual for an eager looking woman to ask of the girl cashier: "What kind of plants do they grow in the Planetarium?" And the young man sitting behind his money boxes was not particularly surprised when an elderly quiet gentleman, pointing to the Hall of Science, queried, "What time does the Octopus ceremony go on?"

The cashiers at the gates had their own worries and amusements. There was the tired and somewhat wind-blown woman who appeared from within the grounds late one afternoon to ask if that was the same gate at which she had entered in the morning. Then there were, as always in such amusement centers, the people who tried to beat their way in, the woman who had lost her season ticket and the man who thought that because he had eight children with him he should have a wholesale rate.

Cashiers had to be alert and resourceful. Late one evening a man flashed a gold police star at the gateman and he was admitted, as police and firemen were always welcomed into the grounds free. But this man did not look like a policeman so the gateman beckoned the gate lieutenant to follow him. This he did, to the fence, where the badge was passed out, and in a few minutes it was again presented, shrewdly, at another gate. The lieutenant having kept track of it, detained the man and found that it was a missing badge stolen from a police official. But it takes courage to arrest a policeman.

Ticket Handling

Study had been given to the possible use of script instead of cash at all concessions throughout the grounds, but the difficulties experienced with it at amuse-

ment parks decided against its use for an operation as large as A Century of Progress.

Tickets used at the admission gate and at concessions were not handled through the branch banks, but by a separate division set up under the supervision of the ticket custodian. With this settled the problem of the types of tickets and ticket-selling machines was investigated. It was decided that the most practical machine was one which vended tickets in numerical order and recorded each ticket as it was released from the machine.

Tickets sold in advance of the opening, good at any time during the Fair, were printed on a special paper stock, selected because of the impossibility of counterfeiting. This paper was made up of special layers of distinctive colors which became readily visible when the ticket was torn.

Tickets used each day at the gates were of the strip-folded type on the usual ticket stock of thirty varying colors and imprinted "Good only on the day printed hereon." As a precaution against counterfeiting, each ticket bore one of thirty different overprints, the design and color of which changed at random each day. Arrangements were made with the printer to supply tickets on twenty-four hours' notice. No one, except the ticket custodian and the printer, knew either the color of the ticket or the overprint until the tickets were turned over to the cashiers at the gates for sale. Tickets used at the concessions were of the same type except for the changing of color, overprinting and date.

The type of turnstile used at the entrance gates and at concessions having ticket admissions was the three-bar type manufactured by the Perey Co. They were purchased, as was all of the revenue control equipment, on a re-purchase agreement, the re-purchase price being determined at the time of the original sale.

Their operation proved eminently satisfactory, though some of those entering had difficulty with the unusual angle of rotation. Occasionally the third arm would smack a slow entrant on the back, sometimes to the embarrassment of the cashier, who was accused of patting the visitor through.

Electric contacts were fitted to each entrance gate turnstile and every admission was instantly recorded on master counters in the Administration Building. In this way the number of visitors in the grounds and the rate of entrance could be immediately determined. It was not used for revenue control.

A number of concessions including those for the sale of merchandise, beverages, and food required the use of a cash register in order to control the revenue. In so far as possible, the registers were standardized for a particular type of concession. In most concessions the smallest type of register was used with, however, the added features of a large visible indicator, a detail tape, and a cumulative total register. Registers with the same protective features, but registering higher denominations, were used by merchandise concessions in which the individual sales were large. The restaurants required either a register used as a food checker, or one of large denomination for a strictly cash operation or, in some cases, a combination of both. Approximately 1,200 cash registers were used during each season.

Insurance

During 1929, the firm of Marsh & McLennan was made the official insurance broker, an arrangement which proved eminently satisfactory during the entire life of the Exposition. Robert M. Cunningham of that firm distinguished himself for the diplomatic, effective and fair manner in which he administered all matters under the agreement.

The question of Workmen's Compensation on employees of contractors, a liability which by law passed to the owner of the property under construction unless covered by the contractor, was eliminated by placing full responsibility on the contractor, including injuries to the public, and by securing certificates of such contractors' Workmen's Compensation and Public Liability Insurance. The contingent liability of A Century of Progress was further protected under an owner's protective liability form of coverage. The question of fire and windstorm insurance on increasing values was covered under a special policy form with bimonthly increases in amount.

Prior to January 18, 1932, coverage was placed in the various companies as required. It was soon evident that such an arrangement would not be satisfactory, because the various kinds of construction would make some structures desirable risks and others undesirable from the insurance companies' viewpoint. To overcome the possibility of cancellation and replacement and also to provide a sufficient market for all coverage needed, Marsh and McLennan, with the aid of the Chicago Board of Underwriters, arranged an insurance pool to write all fire and windstorm insurance needed on A Century of Progress property at an average rate. A group of more than 100 stock companies agreed to this arrangement, which with minor changes continued in force throughout the Exposition. In April of 1933 the Mutual companies organized a similar pool and insured 10 per cent of the total value at risk.

The pool started operation January 18, 1932, on the issuance of a policy in the amount of \$1,800,000.00 and this gradually increased until with final adjustments the coverage amounted to \$5,571,000.00, representing values approximating \$7,000,000.00. The total cost of this coverage was \$144,072.50.

When it was decided to continue the Fair during 1934, it was necessary to replace the fire and windstorm coverage. All structures were re-valued and the total insured value of 1934 amounted to \$2,963,600.00 at a total premium cost of \$54,176.31. All losses to October 31, 1934, at which time all coverage ceased, amounted to \$361.01. This was an extraordinary record and reflected on the materials used, their construction, and the infinite care of every employee.

A cardinal principle ingrained in every employee was to turn in the fire alarm at the first suspicion of a fire. Investigation could come after the alarm had been given. Under no circumstances was an attempt to put out the fire to be made, even though it looked minor, until the fire department had been summoned. Many small fires could be easily repaired, but a major conflagration would have been disastrous. There would be no time to rebuild a major structure during the

Fair period and the charred skeleton of a building would have had a depressing effect on the carnival spirit. To a large extent this same principle guided our attitude on insurance. The money from a destroyed building could not compensate for its loss. An Exposition being of limited duration, presents a special problem. Articles loaned for exhibit were insured under an all-risk form of coverage. The risk was assumed on contents owned by the Exposition.

Public liability coverage was necessary from the time the first land was turned over to the Exposition for the construction of buildings, through the construction period, the Fair operating periods, and the demolition period, until its return to the Chicago Park District.

A special policy of public liability was drawn by the Zurich General Accident and Liability Insurance Co., covering the legal liability of A Century of Progress. It was the intent of the Exposition management that the coverage should be broad enough to cover all possibilities of accident claims, and such intent was fully accepted by the company. No question ever arose over any claim presented.

Every effort was made to reduce hazards and all claims were expeditiously handled. The insurance company assumed the responsibility of hospitalization and arranged with Dr. F. W. Baylor for the establishment of a first class receiving hospital on the grounds.

In the same arrangement, claims for damage to property of visitors were handled by the Zurich, although no insurance of this character was carried. The insurance company was later reimbursed by A Century of Progress plus a small charge for handling.

During the pre-Fair period, the amount of money at risk was small, but during the Fair operation especially broad and flexible coverage was required, since it included the cash fund of \$200,000.00 coverage on the main bank in the Administration Building, nine branch banks, the main gate cashiers' booths at the various entrances, the 2,000 stations within the grounds and the bank messengers. Many precautions and safeguards were installed and the coverage was written on a blanket form to include all possible contingencies. The coverage was in the amount of \$200,000.00 at a premium of \$7,000.00 for 1933 and \$6,000.00 for 1934. The vast amount of money handled was considered by the insurers as extremely hazardous; however, the exposure at any one location reduced this hazard. No loss was sustained either year and the insurance company profited 100 per cent.

The cost of all insurance to the Exposition, from January 5, 1928, to October 31, 1934, based on gross premiums, was \$847,963.09. In addition to the types already described, the coverage included fidelity bonds, customs bonds, performance and construction bonds, the South Park Ordinance bond, miscellaneous bonds, riot and civil commotion insurance, plate glass insurance and marine insurance. In addition, exhibitors and concessionaires carried extensive insurance coverage on Workmen's Compensation, Public Liability and Property Damage, as well as Fire and Theft.

Many pages could be written describing the methods used to make up payrolls,

keep time records, handle garnishments, attachments and assignments, and handling billings and vouchering and auditing accounts. Many words of praise could be bestowed on the faithful accountants, auditors, clerks, tellers, cashiers, collectors, and all those who often toiled through the night to keep up-to-date the tremendous volume of financial minutia in which a fair is involved. Most of it could never be spectacular, but it was necessary and they were faithful, as the financial results testify most eloquently.

PROMOTION AND PUBLICITY

Century of Progress publicity, in common with all legitimate publicity, carried itself by its own worth. News items, stories and pictures given out from the Fair concerning its different phases and activities all held intrinsic interest for the reader, the movie-goer, or the radio listener.

The theme of the Exposition, its plans for basic science exhibits and its endorsement by the National Research Council opened doors for publicity in many fields, particularly educational. The unusual architecture, novel and striking use of color, new building methods and engineering principles created interesting controversy. The exhibits furnished informative and entertaining reading material, and the purpose of the Fair was provocative of editorial comment.

The publicity for an exposition must be widely differentiated from such attention-arresting occurrences as Presidential campaigns or World Wars. The exposition was a deliberately planned event rather than a natural happening and carefully worked out plans had to be laid to bring it to the attention of the world.

Newspapers in every section of the country and in the remote corners of the civilized world carried news of A Century of Progress. Magazines of national circulation published special illustrated stories and every type of class and sectional magazine from religious and agricultural publications to the most obscure house organ told its readers something of A Century of Progress.

Newsreels throughout the world showed the landscape and the domed and spired sky-scape of the Fair itself, its exhibits, and activities. Radio, for the first time at any world's fair, was available for spreading of the story.

The problem of arousing in people sufficient enthusiasm to support and attend

a world's fair is primarily one of mass psychology. From the days of the Roman circus to the parades and spectacles of the present, the thrilling and the unusual have held the same appeal to human emotions. The steady reiteration of time and place and purpose is irresistible.

The character of the attendance at A Century of Progress was the best proof of the far-flung appeal of its publicity. A large portion of the attendance came from outside Chicago, and even from beyond the boundaries of Illinois. It was one of the greatest peace-time movements of people in all history. How such results were obtained is an interesting commentary on the relative merits of publicity methods.

First Publicity Efforts

The first publicity of the Fair was directed by a committee under the capable chairmanship of Homer J. Buckley. To arouse interest from scratch, to overcome opposition from those who believed that world's fairs brought on depressions, and those who felt that because of movies, the radio, and the automobile, the days of fairs were forever over, was no mean task. Combined with the effective work of the \$5.00 membership committee under Stuyvesant Peabody all Chicago was made conscious, if still skeptical, of the plans for an Exposition.

An amusing incident occurred during these early days. To acquaint Chicagoans with the reasons for a Fair, they were invited to hear a debate in one of the large theaters on the subject, "Shall Chicago Have a World's Fair?" Eminent speakers were chosen for both sides and invitations and reserved seats sent to leaders in all fields of Chicago activities. But a catastrophe occurred just two days before the scheduled event. The gentleman who had agreed to take the negative withdrew on the grounds that all the arguments were in favor of having a Fair, that the auspices under which the debate was being held clearly indicated that the affirmative must win and that he would be placed in an unfavorable position by apparently opposing something so obviously for the good of the city.

Frantic but unavailing efforts were made to find a last minute substitute, for it was too late to cancel the performance. In desperation, a voluble member of the publicity committee was prevailed upon to sacrifice himself and take the negative. To make a good show, he read all the letters opposing the fair and in his enthusiasm built up such a strong argument that he received the unanimous verdict of the judges.

While publicity had been in operation since 1928, the Department of Promotion was not established until November of 1931. The fine work of its Director, E. Ross Bartley, of John Clayton, George A. Barclay, Victor Rubin, P. J. Morrison and their staffs is more fully covered in the chapter on organization.

LEGAL PHASES

Is a "treasure hunt" gambling? Is "grease paint" clothing? What is a "bar?" When does a promise become a contract and what right of recovery has the recipient of such a promise? What persons in the hierarchy of the corporation can obligate it? Can you listen to a presumably friendly suggestion, without incurring the risk of later damages, if you adopt it?

These, and a thousand and one other queries of a similar or of a much more far-reaching and serious import, were presented to the Exposition's legal advisers.

In the formative days, legal matters were handled by a "Committee on Legal Affairs," appointed by President Dawes from the members of the Association. This Committee consisted of: C. C. Carnahan, Chairman; William H. Beckman, Francis X. Busch, Samuel A. Ettelson, Carl Latham, Amos C. Miller, and Julius Smietanka. To the activities of this committee are due the preparation of the by-laws and the early incorporation of the Association.

With the beginning of the active work of preparation for the Exposition, it became apparent that the legal work involved was more than could be expected of a voluntary committee, and arrangements were made, on April 11, 1930, with the law firm of Carnahan & Slusser to act as General Attorneys for the Exposition.

With the exception of some few special matters, all legal affairs were handled by the General Attorneys, with the help of assistant attorneys, who were employed directly by the Exposition and had their offices in the Administration Building. Assistant attorneys B. L. Grove and W. E. Dever did exceptionally fine work in

expediting the preparation of the vast number of contracts with exhibitors and concessionaires.

Following the appointment of the General Attorneys, requests for opinions and the handling of matters requiring legal attention, were for the most part transmitted to the attorneys through the office of the Secretary of A Century of Progress. As the work increased, it became evident that a more intimate coordination between the General Attorneys and the office of the General Manager was necessary for the promotion of efficiency and speed in the dispatch of business. Accordingly, on September 30, 1931, a section of the General Manager's office was created, and thereafter continued to function under the title of "Legal Section".

The function of this office was to keep the General Attorneys advised as to all matters requiring legal attention, and to serve as the contact point between them and the General Manager. During the progress of the Exposition, innumerable practical problems daily pressed for solution. It was obviously necessary for the General Attorneys to be advised immediately as to the existence and nature of such problems as might have legal significance or repercussions. Col. F. C. Boggs, by virtue of his capacity as Technical Assistant to the General Manager, was the official in constant touch with these problems, and, hence, was the logical head of the Legal Section. Thomas H. Slusser, as head of the legal staff was responsible for the preparation and execution of the legal phases of the Exposition's work, and his devotion saved the Fair much legal grief.

General Legal Principles

Litigation is warfare and is the last resort when all other means fail. Like war, it should be avoided whenever possible, and such avoidance could best be accomplished by the careful foresight enunciated in the general principles followed by the Fair's legal advisers.

These were based on the old proverb "An ounce of prevention is worth a pound of cure". As interpreted by those in charge of the legal matters, their major function was to guide the affairs of the Corporation so they might operate properly and smoothly. As they viewed their duties, it was obligatory on the lawyers to assist the executives in seeing to it that policies and objectives, and the methods of putting them into execution, were legal and sound. In this view, the Management of the Corporation heartily concurred, especially as the organization and the operation of a great Exposition involves some characteristics not incident to the carrying on of any other business, however large.

An Exposition is a show; a show of sufficient magnitude to justify the Great Barnum's slogan of "The Greatest Show on Earth". In the conduct of an exposition the importance of the actor's dictum, "The show must go on", is magnified to the 'nth degree. Men, materials and equipment must be delivered when and as needed, or in many cases it is forever too late. With the ordinary business, litigation is always a nuisance, usually an expensive luxury, and sometimes disastrous.

But with an Exposition, which must proceed with no delays in the accomplishment of its schedule of preparation and operation under penalty of suffering irreparable loss in its gate receipts, litigation takes on an even more ominous aspect. The nuisance becomes redoubled, taking as it does the attention of hard-pressed executives who are the underwriters, producers, stage managers, scene shifters, carpenters and stage hands of The Big Show.

The expense may be borne, although usually an exposition has sore need of all of its funds; but more serious than that is the threatened delay and interruption of work. Regardless of the ultimate outcome, if litigation or any other disorganizing condition is permitted to develop which prevents the curtain rising on time, or which seriously interferes with the day-by-day presentation of The Show, or any considerable portion of it, as advertised, real disaster may result. For the Big Show's main asset is its gate receipts, and the public is quick to sense that something is wrong and the turnstiles tell the story.

Moreover, the evanescent nature of an exposition makes it almost obligatory that every effort should be made to prevent matters from coming before a court. Delays incident to court procedure, including the intentional delays of the other parties, might extend cases for months, or even years, at a risk to the corporation, of maintaining an organization at considerable expense, and also of its inability to obtain the testimony of witnesses familiar with the matters involved due to the separation of these witnesses from its employ.

Based on these general principles, the duties of the Fair's legal advisers were, in general, as follows:

Examination of all written contractual agreements before signature by the authorized officer of the Exposition, to determine whether they were in proper form, whether the interests of the Corporation were properly protected, and to see that there was no conflict with other existing contracts or general principles enunciated by the Management.

Examination before issue of all rules, regulations or other instructions, involving others than Corporation employees.

Examination, previous to signature, of all letters which might involve the Corporation in any financial or legal obligation.

Representing the Corporation in suits, injunctions or other matters before the courts.

Conferences with and advice to all departments on any matters requiring legal opinion or interpretation.

In addition to legal matters, the members of the Legal Section were frequently consulted by various department heads concerning matters of policy and procedure.

Drawing of Contracts

The ordinary problems confronting the lawyer in the drawing of contracts were greatly intensified and complicated by the fact that the subject matter of the Exposition contracts was, for the most part, new and untried, and precedents from



Sears, Roebuck Building Combined Lounges with Exhibits.

1934 Fountain Played to Color and Light.





The Children's Enchanted Island.

The Midway on an Average Day.



other Expositions in most cases were inapplicable because of utterly different conditions. It became apparent, early in the period of preparation, that the Legal Advisers must devote special efforts to the drawing of contracts to which A Century of Progress was a party, so that operations thereunder might be carried on smoothly and effectively. The General Attorneys, for their own benefit and for the guidance of the assistant attorneys, established certain rules for the drawing of contracts. These are clear and concise, and form an excellent example of the practical manner in which all legal matters of the Fair were handled.

"1. Find out just what it is that the parties intend and want. Ninety-nine times out of a hundred you will discover that neither party has thought of all the points he desired to have covered in the contract. It is your job by persistent questioning to clear up the hazy spots and to aid in bringing the parties to an agreement on essential elements which have been overlooked by both. The parties usually are agreed upon the objective which they wish to achieve but, many times, they have mutually agreed on cumbersome, indefinite and impractical machinery to reach that objective. It is also a part of your job to suggest simple means for accomplishing what the parties desire. Simplicity is at all times the essence of a good contract. Usually the broad highway of established and well recognized business principles is preferable to circuitous by-paths through the bushes of uncertainty and doubt, even though the latter may seem to be shorter.

"2. Simplicity and clarity of language is the outstanding feature of a good contract. Most of the time which a good craftsman spends on a contract is spent to eliminate the use of unnecessary words, not to add additional ones. If you require an undue amount of language to express your thoughts, the chances are your thoughts are still 'fuzzy'. Analyze the matter further in your own mind and then phrase it in its simplest terms. Many contracts are of considerable length because the number of necessary and integral parts is great. But it should be possible to phrase the mechanism of each part simply and without undue complications. Strive always, however, to eliminate unnecessary parts. That is the direction of progress and good craftsmanship in the engineering field. It is no less true in the drafting of legal documents.

"3. After you have drafted a document, read it over carefully, testing each provision as to clearness, workability and safety. A contract may sound good and an engineer's drawing of a bridge may look good, but the test of either is how will it stand up when pressure is put upon it. The draftsman of a legal document must keep in mind at all times his 'Stresses and Strains'. Ask yourself these questions among others:

"Is the contract clear, definite and certain so that a court can enforce its provisions?

"How would you make proof in court in the event your client were compelled to sue for breach of contract?

"Is every possible provision made to enable your client to keep out of court, that is, are remedies provided in so far as possible which are either self-enforcing or capable of enforcement by your client?

"Is the contract as simple as you can make it?"

"Is the contract workable from a practical business man's standpoint?"

"Does the contract violate any of the commitments of A Century of Progress to South Park Commissioners, concessionaires, exhibitors or others?"

"Having in mind that a theoretical legal right of A Century of Progress to litigate in court questions arising under the contract is of little or no value because of the necessity of immediate correction of anything which hinders or obstructs the holding of an attractive, smoothly functioning exposition, have you made every possible provision reserving to A Century of Progress freedom to take necessary summary action?"

"4. *Avoid as you would the plague the fetish of 'legality'.* It is assumed, of course, that you will draw a 'legal contract' with proper consideration, in harmony with all laws and ordinances under which A Century of Progress operates and not in violation of any other contractual commitments previously made. But your job is to produce a simple, workable, safe contract, a contract which fits the necessities of the situation in which A Century of Progress finds itself. Contracts to be of any use to A Century of Progress must be so devised as to produce men, material and services when and as needed. The right to sue somebody if a contract does not accomplish these results is of approximately the same value to A Century of Progress as a perfectly legal set of dispatcher's orders are to a train crew after the orders have brought about a 'head on collision'.

"5. *Discuss freely with your associates in the legal section and with the General Attorneys the principles of any contract which presents new, unusual or difficult questions.* This need not involve unnecessary duplication of work, and it will be of great assistance in protecting against entering into some undesirable or dangerous commitment. The man does not live who does not have his 'blind spots' in considering and working on any question. But rarely do two men have the same 'blind spots', and cooperation minimizes the danger.

"6. *Insist at all times on giving adequate attention to problems presented.* It is for you to determine whether a particular matter is a major operation or the removal of a hang-nail. And don't permit the urgings of the operating agencies to induce you to attempt to perform a major operation in the time it takes to remove a hang-nail. The results will most certainly be disastrous to the patient. Speed? Yes, at all times speed is necessary but the old adage of 'Make haste slowly' is still good."

Building and Exhibit Contracts

One of the first of the major tasks was the drafting of standard forms of contracts for the construction of buildings, together with the general conditions constituting part of such contracts. Special considerations rendered it necessary that these standard contracts and general conditions be worked out with exceptional care. The question of whether mechanics' liens could attach to buildings on park lands, and what would happen if such liens did attach, were among the problems considered. The general conditions contained a provision that no liens of any

kind or description could be attached to the work, construction or premises covered by the contracts, and that the contractor would in all cases deliver the same fully completed under the contract, free and clear of any and all such liens.

In view of the ever present necessity for speed and completion of construction work on time, special provision was made for the right of A Century of Progress, in the event of default of the contractor, to terminate the contract and to perform the work itself. Having in mind the public nature and activities of A Century of Progress, and the undesirable effect which would inevitably be produced in the event a contractor failed to perform his contract, leaving claims for material and labor unpaid, careful provision was made so that A Century of Progress could withhold payments due under the contract and apply the same directly in discharge of amounts due for material or labor. Special forms for application by the contractor for payments were provided, which enabled A Century of Progress to keep accurate check on the operations of the contractor with respect to meeting his obligations to others.

It is interesting to note that all of the construction work done by A Century of Progress under these documents was carried out and performed with substantially no delays or difficulty, and that no litigation of any kind arose in connection therewith.

Of equal importance were the forms of exhibit contracts and the rules and regulations for exhibitors adopted by A Century of Progress. Some precedents from other expositions were available, but because of special conditions it was necessary to devise much of the framework of these contracts and regulations without the assistance of precedents. The special nature of the occupancy by A Century of Progress of the park lands devoted to the Exposition and the plan adopted whereby exhibitors, for the most part, paid for their space in advance, required careful provisions in order to avoid uncertainty and confusion.

It will be remembered that it was necessary that these exhibit contracts and regulations be available for distribution early in 1931, and before the buildings set aside for exhibit space were fully designed. The policy of the Management that no building should be constructed until funds were in sight for the purpose demonstrated its soundness in the results obtained. This policy, however, required the utmost care in the drafting of the contractual relations with exhibitors, so that no exhibitor could justly complain as to the location and nature of the space assigned to him, or as to the privileges granted.

In preparing the contracts and regulations for exhibitors, the exposition carefully considered the question of policy as to whether these documents should be drawn containing all possible provisions whereby A Century of Progress might take summary action in the event of failure on the part of the exhibitor to operate his exhibit in a satisfactory manner, or whether, in the interest of removing "sales resistance," they should be milder in form. It was decided to pursue the former course. Accordingly, the contracts and rules and regulations for exhibitors were drafted enabling A Century of Progress, in a summary manner, to step in

and correct any possible misuse by the exhibitor of his space, or the privileges extended to him.

The wisdom of this policy adopted with respect to exhibit contracts and regulations was fully vindicated. It is interesting to recall the comment of an executive officer of one of the first and largest exhibitors at A Century of Progress (a lawyer, by the way) who, after carefully reading the exhibit contract and regulations, stated, in substance, that he had no objection thereto and that if his company were undertaking a project such as the Exposition, he would want just such a contract. This viewpoint was generally held by the exhibitors at A Century of Progress, it being understood that the severe provisions of the documents were actually for the protection of the exhibitors themselves.

Drafting Concession Contracts

The drafting of concession contracts and regulations followed soon after the preparation of the contracts and regulations for exhibitors. Much the same questions arose in connection with the concession documents as were experienced in the preparation of contracts and regulations for exhibitors, with some additions. Most of the exhibitors were corporations and individuals engaged in established businesses. A large portion of the concessionaires consisted of corporations and groups of individuals organized for the sole purpose of operating the particular concessions involved, so that financial strength and stability of previous management, in many instances, were lacking.

The experience of previous expositions in connection with stock-selling campaigns by concessionaires designed to raise money to finance concessions, was anything but satisfactory, and much litigation arose out of such activities. Special efforts were exerted to avoid the evils incident to improper methods of financing on the part of the concessionaires. In all cases, it was insisted that the concession contract should be made with the real parties in interest, and no assigning or subletting of concessions was permitted without the consent of A Century of Progress. The insistence upon this principle was undoubtedly effective in avoiding trouble.

Recognition of the public belief that the Exposition would be opened on time and would be successful, could be used by overenthusiastic promoters of concessions to further their schemes. Regulations for concessionaires provided that no advertising matter of any kind or description, designed to induce financial participation in a concession, should contain any statement to the effect or implying that the concession was an activity of, or operated by, A Century of Progress. The regulations further required that every prospectus and circular designed to secure assistance in the financing of a concession must bear on its face in bold type the statement,

"A Century of Progress is not interested in any way in the sale or the distribution of the within-mentioned securities."

It is but fair to state that the great majority of the concessionaires of A Century of Progress were men of integrity who performed their obligations under diffi-

cult circumstances. It is believed that the care exercised in the selection of concessionaires and in restricting methods of financing and operating were effective in keeping dangerous and unsatisfactory conditions from developing.

Insurance Matters

Litigation in which A Century of Progress was involved, arising out of personal injuries sustained in the course of the Exposition, fell into two classes; suits at law in the courts of Cook county, and Workmen's Compensation proceedings before the Industrial Commission.

One of the first steps necessary for any exposition, large or small, is taking out adequate insurance covering public liability and workmen's compensation liability. A Century of Progress also decided that exhibitors, concessionaires, contractors and others, engaged in activities on the Exposition grounds, would be required to carry like insurance, and that A Century of Progress should be named as co-assured in the policies for such insurance. The wisdom of this policy was demonstrated by the results obtained.

Under the guidance of Marsh & McLennan, insurance brokers for the Fair, blanket policies covering public liability and workmen's compensation insurance were taken out with the Zurich General Accident and Liability Insurance Co., Ltd. By agreement between this corporation and A Century of Progress, a first aid hospital was established and maintained on the Exposition grounds, equipped with adequate facilities and personnel. The immediate attention of all persons requiring medical assistance, through the facilities of this hospital, was not only economically advantageous to the Exposition, but also produced ideal results from the public and humanitarian standpoints. Under these insurance arrangements, also, the insurance carrier provided prompt and experienced investigation of claims, a service which it would have been difficult, if not impossible, for A Century of Progress to provide from among its own personnel.

Favorable public comment upon the manner of handling the delicate and difficult questions arising in this phase of the Exposition's activities, was additional approval of the methods used. Reports show that covering the entire period of preparation and operation, including both expositions, the number of cases handled by the Zurich Company, exclusive of cases settled before action commenced was only one hundred and twenty-five.

Numerous questions arose during the Exposition period in which the technical counsel and advice of the Fair's insurance brokers, Marsh & McLennan, were of the greatest value to the Exposition. A Century of Progress is particularly grateful to Charles Ward Seabury, William Otter, Robert M. Cunningham, and Gordon Fox, of Marsh & McLennan, for their untiring efforts in solving the questions which arose.

Suits in Which the Fair Was a Party

It is one thing to set forth general principles; it is another to make them work. How effective the legal advisers' efforts proved is best demonstrated by the re-

sults of litigation in which A Century of Progress appeared as a party.

Exclusive of Workmen's Compensation, cases and suits brought against A Century of Progress which were covered by public liability insurance, cases at law and in equity in which the Exposition appeared as a party amounted to only eighty-one. Most of these were promptly disposed of, and none remained when the Exposition's affairs were finally closed. In no cases at law or in equity was a final order or judgment entered adverse to A Century of Progress.

A number of the cases at law and in equity were bills for injunction against A Century of Progress to restrain it from interfering with certain concessionaires operating games and side-shows which, under the terms of concession contracts, had been summarily closed by the Exposition in whole or in part because of improper operation by the concessionaires.

As to the so-called "games of skill", experience showed that, however carefully a concession contract may be drawn, it is practically impossible in the contract to preclude a concessionaire from overstepping the line of proper operation. There was not a sufficient percentage of profit in a game of skill to satisfy a few of the operators. Human nature among the customers being what it is, the gambling feature is the chief allure. And human nature among the operators being what it is, the gambling feature is frequently used merely as a "front" to cover up manipulation of the game so that the player has little or no chance.

During the first few days of the 1933 Exposition, it became evident that drastic methods would have to be adopted in order to hold the operators of so-called "games of skill" within satisfactory bounds. The summary methods taken by the Management in closing objectionable concessions of this nature, and defending such action in court, were in large part effective in keeping this evil under control. It is interesting to note that because of the determined stand and action taken by A Century of Progress in this regard, the complaints and trouble arising from this source during the 1934 Exposition were negligible.

Suppression of indecent exhibitions on the grounds followed a very similar course, although this evil was even more difficult to keep under control. The ballyhoo of this type of concession was frequently more objectionable than the exhibition itself. Repeated warnings were effective temporarily only, and the temptation on the part of the operator to paint a word picture of something which should not be seen, and which, as a matter of fact, did not exist, was too strong to be resisted.

In one case, after repeated warnings, summary action was taken and the show was closed. An injunction suit was commenced by the operator, and A Century of Progress counter-attacked by asking for an injunction against the operator to restrain the use of objectionable ballyhoo. This injunction was granted, and the peril of contempt proceedings in the event of violation of the injunction thereafter was largely effective in keeping the operator within due bounds. The issuance of this injunction at the instance of A Century of Progress also had a salutary effect in other cases. Since an action in court presented an excellent opportunity for free publicity, the policy of the Exposition was to eject from the grounds

and take up the passes of performers guilty of improper conduct. Much to their disgust their demands for their "constitutional right to be arrested" were ignored.

The Fair's experience in connection with both the 1933 and 1934 Expositions warrants the conclusion that the drastic provisions contained in its concession contracts providing for summary closing of concessions for improper operation were fully justified, and that summary action is the only effective way of keeping concessionaires of this type within the proper limits. The bringing of injunction suits by concessionaires who had been subjected to discipline of this sort presented no serious difficulty. It always was found that the courts were inclined to support the Exposition in its reasonable efforts to keep the grounds clean.

Of the litigated matters, only three cases were commenced by A Century of Progress. One of these was a suit at law by A Century of Progress to recover balance due from an exhibitor at the 1933 Exposition, the case being settled before trial. Another was an injunction suit brought by A Century of Progress to restrain the publisher of a private guide book from designating his book as "official", in which suit the injunction was granted. The third was a suit in interpleader brought to procure the decree of the court as to which of two contesting claimants was entitled to certain funds held by A Century of Progress in which it claimed no interest. Needless to say, the decree was entered and the money paid over.

Settlement of Litigation

Settlements of litigation were made in some instances where circumstances warranted such action, but the records show that the amount of money paid out by A Century of Progress in this way was comparatively insignificant. Nevertheless, the willingness of the Exposition to examine carefully the facts and possible equities on both side of any controversy and to do what was fair in the light of such examination was most helpful in economically disposing of controverted matters in and out of court. It became quickly known that a fair claim would be promptly and equitably settled, but threats or attempted "shakedowns" would be met with an uncompromising rejection. This policy built up confidence in and good will for the Exposition and avoided much litigation.

The one hundred and sixty-nine suits of garnishment and attachment were the result of the fact that A Century of Progress collected the concessionaires' money in nearly all cases. The great majority of garnishment and attachment cases commenced were brought by creditors of concessionaires, seeking to collect claims of monies in the hands of A Century of Progress belonging to the concessionaires.

Many difficult and intricate questions arose in connection with this type of litigation, but the records show that almost without exception the questions involved were disposed of to the satisfaction of all concerned. Dismissal of garnishment and attachment cases by stipulation of the parties was frequent, and, of course, such disposition of these cases rested upon adjustments out of court satisfactory

to the parties. A few of the concessionaires, who were unfortunate in the selection or operation of their amusements went into bankruptcy.

In addition to the questions ordinarily arising in bankruptcy matters, these cases presented two problems somewhat unusual in character. In those cases where a receiver or trustee was appointed by order of the Federal Court during the operating period of the Exposition, it usually was the desire of the receiver or trustee to make such disposition of the physical property of the bankrupt that some new operator might go into possession and take advantage of the operating period remaining.

In all cases A Century of Progress took the position that the right to operate the concession was personal to the bankrupt and did not pass to the receiver or trustee, but that it would permit any new operator selected through the bankruptcy proceedings to go into possession and operate, provided such new operator was responsible and would make a satisfactory arrangement by contract with A Century of Progress for the new operation.

The Federal Courts sitting in bankruptcy sustained A Century of Progress in this position, and purchasers or lessees of physical assets from a bankrupt estate entered into new concession contracts with the Exposition under the order of the Federal Court. While some of these rearrangements were troublesome, they worked well for the most part. The willingness of the Exposition to grant new concession privileges, under proper contract, to responsible parties acquiring bankrupt assets, evidenced to the courts a fair and reasonable spirit on its part and produced good results.

The problem of demolition presented new questions in connection with bankruptcy cases. Under the law all interest of a bankrupt in the physical assets of the bankrupt estate passes to the trustee in bankruptcy. A Century of Progress, however, took the position that the interest of the trustee in bankruptcy in such physical assets was encumbered with the obligation resting upon the bankrupt, by virtue of his concession contract, to demolish structures and restore the premises at the close of the Exposition.

Again the Federal courts agreed with this reasonable view, and proper orders were entered so that any purchaser of the bankrupt's physical assets was under the necessity of performing the obligation of the bankrupt to demolish as a condition to his getting the benefit of his purchase. While the procuring of the necessary orders in bankruptcy cases, in order to accomplish demolition of properties in bankruptcy, required considerable attention, the procedure outlined was carried out with no substantial difficulty.

The final phase in the legal history of A Century of Progress was finished three years after the close of the second exposition.

A Century of Progress asked the Superior Court of Cook County, Illinois, in December of 1936 to:

1. Take jurisdiction of the accounting of A Century of Progress;
2. Ascertain, expedite the hearing of, and determine all existing claims;

3. Order and direct payment of such claims as the Court may find and determine to be just and proper;
4. Enter a final decree;
5. Give to A Century of Progress and to the parties to this suit other further and efficient relief as may be in accord with the principles of equity and as the Court may find fitting and proper.

The Final Decree handed down in December 1937 closed with these words: "It is ordered, adjudged and decreed that the Decree in so far as it requires the making of any payment of money by A Century of Progress be, and the same hereby is, satisfied of record."

The Exposition's obligations had been met. It has paid off its bonds, settled its outstanding accounts, and apportioned its profits to specified institutions. Satisfaction had been given to the Corporation itself, the exhibitors, the public, and the courts. Its accounts were closed.

CONSTRUCTION OF FAIR BUILDINGS

As work on the buildings began, there was need for constant alertness and forethought. While the construction equipment required was mostly light, and operations of filling, grading, pile driving, trenching and foundation excavation called for no unusual processes or apparatus, the employment of new materials was continually demanding departures from standard practices in erection.

Progress was often hindered by the miring of derricks and trucks, particularly in the caisson clay, a sticky plastic material which came from excavations of Loop buildings, and which constituted part of the fill. Since, heretofore, no accurate utilities maps of this section had been needed, accidental penetration of water mains and park system cables by workmen was unavoidable, and the cause of many exasperating delays.

Test borings through the top fill, taken as closely as 15 feet apart, gave entirely different results and made it almost impossible to figure accurately on spread-type foundations for the buildings. The ground might settle badly below a loaded area, and rise in unloaded areas nearby. This condition made necessary the use of pile foundations for most of the buildings. Of the Exposition's own structures, the Administration Building was on consolidated fill, and the Travel and Transport Building (outside of the dome) and the Home Planning Hall were on sand fill.

For economy's sake, a system of one and two-pile footings under columns was employed, instead of following the general practice of using a minimum of three piles under each column. Single piles were used under columns along exterior walls, with a wall beam supporting the wall at the ground surface to resist any

eccentricity of the pile in relation to the center of the column. Two or more piles were used under interior columns.

Further economies in piling were achieved by the use of cantilevered concrete girders, extending over and beyond the piling. These were used to support walls set away from columns and, likewise, to support stair construction. This method of pile foundations became standard for the construction of all buildings erected by the Exposition.

Pile-driving conditions afforded interesting problems. In the Hall of Science area, it was almost impossible to prejudge the length of pile required. A 65-foot pile might be started and have to be driven with a follower from 8 to 12 feet below grade, to obtain proper bearing value. A second pile, 75 to 80 feet long, would be used in order to make certain that it would bring up properly above grade. Though but a few feet away this second pile would reach absolute refusal when 20 or more feet above ground. To bring the piles driven with followers to the surface, an excavation was made to the pile butt, and a 15-inch corrugated culvert section set on the pile to bring it to the proper height, and filled with concrete.

Unusual Materials and Construction

The problems of materials and construction paralleled those confronting an engineer in war time, in that they must perform for a short period at a high degree of efficiency, yet allow speedy and economical demolition, once their purpose had been served. Here, however, the military parallel ended, for not only were strength and durability essential, but architectural fitness must be observed, and fire resistance and safety were of prime importance. The materials used were determined by application of a few basic qualifications.

Low cost in manufacture and fabrication, and the minimum of field work for erection were fundamental. Light weight, reflecting a saving in supporting framework and foundations, was essential from the standpoint of cost cutting and labor saving. The necessity of demolition demanded ease and security of fastening to joists, and materials which would permit easy disassembly and have a high salvage value.

The early structures were practical field tests of the various ideas that had been developed to meet the peculiar requirements of an Exposition. Particularly true was this of the Administration Building, first of these structures, which, from its cornstalk roof insulation to its sour milk paint, was truly a laboratory for the new in material and construction.

Many materials were investigated and, of these, some eminently suitable had to be passed over, for while satisfactory for temporary structures, they were too expensive. Among those which met the requirements may be listed—precast reinforced gypsum slabs with interlocking joints; precast reinforced magnesite composition slabs with interlocking joints; matched wood planking, including finished wearing surface in the single deck thickness. Precast reinforced light

weight concrete slabs, with interlocking joints and wearing surface, were used on ramps.

Framework

For the skeleton framework in two-story buildings, with terraces overlooking courts or the lagoon, structural steel proved more economical than timber. In addition, the use of this material satisfied the underwriters' requirements of non-combustible framing of multi-storied structures, and gave a clear floor span of the 20 or more feet needed by exhibitors. No fireproofing of either columns or beams, such as is required in permanent buildings, was used at the Fair.

The typical framing consisted of bents of structural steel girders, varying from 20 feet to 30 feet spans for floors, and up to 50 feet spans for roofs. Structural steel shapes were designed for unit stresses not exceeding 21,000 pounds to the square inch, and the steel joists were designed for stress not to exceed 18,000 pounds. This limited deflections to $1/360$ of the span. Standard steel open truss joists were selected as the most economical.

Uniform, full support was insured by specially developed stiff compression bridging, rigidly attached to the joists by field welding and by ingenious clamping on the steel girders at the bearings. Connections of typical girders to columns were designed to be bolted, arranged with a shelf angle bottom connection of girder to column, and a web flange top connection, so as to develop the maximum rigidity of the joist for wind stiffness.

Such framing was adaptable to both metal and wood decks; it had simplicity of beam connection; it permitted the use of the space between the finished ceiling and the finished floor above as a ventilating duct. In small, one-story structures, the framing was generally of wood, wood joists being economical up to 16-foot spans.

Most buildings had exceptional features, such as great halls, towers, large cantilevered canopies, projecting pylons or fins, or high ceilings heights. In these instances, individualized framing was designed for the particular condition, involving special wind bracing connections, cross bracing, trusses, steel arches, etc., and were generally riveted in the field.

In these operations, the increase in allowable stress, especially in steel, was one of the experiments in structural flexibility which proved most helpful, and, at the same time, was one of the widest departures from standard practice.

Flooring

Floors on fill were either of plank laid on sleepers bedded in the fill, or of reinforced concrete. Those not on fill were on either a metal or a plywood deck; the live loads were uniform per square foot—in general, 100 pounds. All deflections were limited to $1/360$ th of the span.

Several methods of floor deck construction were developed, all of which were suitable for use over the steel trussed joists. Two types were generally used. The first was of sheet metal, made of individual interlocking channel units 6 inches wide, or made in 16-inch widths with 4 ribs 4 inches on center in each unit.

Experience showed that this metal deck, after being put in place, deformed easily under construction activities and required mastic fill to permit the laying of the finished floor. Without the mastic fill, there was no insulation against sound.

The second type of deck used was a plywood of 5-ply Douglas fir, mill-cut in large panels and laid with V-tongued joints. Besides serving, without additional covering, as a sub-floor for exhibit space, it provided a good insulating value, permitting one-half inch insulating material to be used instead of the one-inch insulation required with metal. Its surface gave an inexpensive finished floor and a greater latitude to exhibitors who desired special finishes. Its cost was about half that of the metal system.

Much experimenting was done on wearing surfaces for floors, both in laboratories and on the site. The factors determining the outcome were low cost of material and application, durability and resistance to wear, and harmony with the remainder of the interiors. The Exposition had agreed to furnish the finished corridor floors and a good subfloor for the exhibit space. Therefore, in considering merits, suitability of the deck for a subfloor was important.

The various materials which were selected for consideration as finishes were laid in sizable samples on top of the subfloor decks of some of the first buildings erected, and thus subjected over a period of a year to construction traffic. Appropriately enough, a large share of these experiments was conducted in the Travel and Transport Building.

Through such a testing process, several faults were revealed, the chief of which were general lifting from the subfloor of some of the composition floorings, excessive wear, or separation from the subfloor on some of the composition tile finishes, and some separation from the subfloor of wood finishes, cemented down. Most of the finishes were generally quite satisfactory. Those showing the best results, and selected for use, were as follows: composition tile on a mastic bed, for offices, magnesite composition finish, wood finish cemented down, and wood fiber sheets on mastic beds for the General Exhibits buildings.

For exterior terraces, much research was given to selecting a light weight material which would be satisfactory over a membrane waterproofing. An asphalt composition plank tile, laid in a hot asphalt mopping, with a hot asphalt mastic finish laid over the membrane, was finally selected. This resulted in a very light weight finish which acted as a component part of the membrane covering, and which provided safety for the pedestrians because of its resiliency and non-slip character. It materially reduced the live-load requirements over the other terrace materials. All terraces were designed for a live load of 100 pounds per square foot. Some terraces were paved with a $\frac{3}{4}$ -inch precast terrazo tile which was laid over a two-ply membrane roofing. In colors it was limited to black, brown and dull red.

Walls

In determining what types of wall sections would be most suitable, conclusive tests as to structural and weather resisting qualities were made in the field. The

main factors to be considered in selecting wall sections were economy in the supporting framework, the effective sealing of joints, the moisture absorption of the surface material, whether structural movement could be absorbed by the wall without damage to the material, the ability of the material to retain a surface paint cover without chemical reaction, and the fire resistant qualities. Also, the wall structure should be light in weight so as to reduce structural framing and foundation costs.

Early in the considerations it became apparent that the solution lay in some form of thin wall board fastened to a structural backing. Such a material could be brought to the job in a finished state which lessened the difficulties of cold weather construction. If properly fastened and of reasonable size, it would resist damage from structural movement in the building, and if damaged, could be cheaply and quickly replaced.

In general, two types of wall construction were developed and used. One utilized light pressed metal channel sections, extending from the base course to the party wall, and forming a finished surface to the wall. These channel sections had interlocking joints for weather resistance. The ribs of the channels were turned toward the inside of the building and were supported on horizontal steel girders, to which they were clipped with a sheet steel device which was readily and quickly fastened with the ordinary tools carried by a mechanic.

The other type utilized various wall boards for the exterior covering, applied on metal or wooden studs, which were in turn fastened to the structural members of the building. Three wall board materials were used: asbestos cement board, a special type of gypsum board, and Douglas fir plywood.

The first of these, asbestos cement wall board, was both durable and incombustible. Since this material absorbed moisture freely and therefore swelled and shrank considerably with variations of moisture content, it was necessary to hold the boards to the studs at the edge with exterior battens which allowed expansion and contraction to take place freely. The stud backings were usually placed two feet on centers. The wall board sizes used were 4-foot widths, in lengths from 8 to 12 feet. They were set with lengths vertical in most cases.

A Z-shaped metal weather strip or flash was used at the horizontal joints, extending up under the upper board and over the lower board, making a fairly weather tight joint. In both the horizontal joints and the vertical joints, a waterproof mastic compound was used to increase the weather resisting qualities of the wall. With this type of wall board, difficulties were experienced in obtaining a lasting paint covering, as there seemed to be a chemical reaction between the wall board and the paint, causing the paint to peel off. However, after experimentation, an effective sealer coat was found, which permitted a satisfactory paint job.

A special type of gypsum wall board was also employed. It was ½-inch in thickness and was also used in 4-foot widths and lengths up to 12 feet, with the joints along the length of the board shaped in a V-form. The lengths of the boards were also placed vertically in most cases. The vertical joints were covered

with batten strips in such a way as to permit movement of the board, and the horizontal joints were flashed with a Z-shaped metal section. All joints were filled with a waterproof mastic.

Gypsum wall board was primed at the mill before delivery with aluminum paint containing a varnish vehicle. This board was found satisfactory for use if protected from moisture by a general prime coat of paint soon after erection, and was found to have an excellent base for final painting.

The third wall board used was $\frac{1}{2}$ inch 5-ply Douglas fir plywood in 4-foot widths and lengths up to 12 feet. It was arranged with half-lapped joints, and generally set with the length running vertically. This board was primed at the mill with hot linseed oil. It could be used for curved sections down to a 20-foot radius. With smaller radii, two $\frac{1}{4}$ -inch 3-ply boards with a coat of white lead and oil between the boards were used.

For interior walls $\frac{3}{8}$ -inch gypsum board was generally used, as this was the only economical wall board commercially obtainable which would meet the necessary requirements as to fire resistance. The butt joints of the interior wall gypsum board were laid close with no filler or joint covering except that desired for decorative effect. The horizontal nailing members were framed between the studs at all horizontal joints.

Roofs and Railings

Roofs were designed for supporting a live load of 25 pounds per square foot uniformly distributed. The surface treatment of all roofs was 3-ply composition roofing felt mopped on with asphalt over the insulation material, which in turn was fastened to the various types of roof deck. On metal roof decks the insulation material was also mopped to the deck with asphalt. On wooden roof decks, the insulation material was fastened by nailing.

In most cases the roofing membrane was carried up over the coping to serve as a flashing. Copings were kept low so as to permit snow to be blown off the roof readily without drifting. All roofs were pitched to the drains so as to secure a complete water run-off. In some cases, canvas decks were used over plywood, and were painted to obtain an interesting variety of color.

The railings on stairways and around terraces on the buildings were largely of the open type to increase visibility. In the main, these open railings were made of welded pipe held in place by clipping over the coping. In most cases they were also braced by a strut lag-screwed to the outer wall face of the building.

The Breathing Dome

While each building had its own construction characteristics, a few of the projects differed so much from the normal building construction of the times that they warrant more specific mention.

The Travel and Transport Building was designed at a time when a large indoor exhibit of historical and modern locomotives seemed certain. In order to view and comprehend their development from the earliest model to the most

modern, it was considered advisable to place them around a circle, similar in arrangement to their position in a roundhouse.

The necessity of great space without columns suggested the cantilever method for covering the building. Accordingly, the mode of construction resolved upon was the adaptation of the principles of the suspension bridge to the roof of a building. Twelve tower columns, approximately 125 feet in height, were erected around the periphery of a circle. These towers were back-guyed to concrete counterweights constructed below the surface of the ground. Cables were hung from each tower to the tower opposite, and the roof construction was suspended from these cables. The roof itself was of very light steel, easily erected with staging, and formed a hemispherical section.

Because of the large amount of movement that occurs in such construction, due to the different conditions of loading and changes of temperature, the twelve columns were constructed with rocker bases which allowed them to take the resultant movement with the development of interior flexure. The maximum movement which took place in this structure amounted to a change in diameter of 24 inches, but this produced a change in circumference at the top of over six feet.

The circumferential difference was provided for in four windows at the cardinal points of the compass. These window motives were hung from the trusses, resting on the towers at the roof line, on sliding connections so that free movement could take place. On the exterior, an overlapping sliding construction joint kept the walls fairly air tight. The sliding connections also took care of the roof lines around the periphery. The change in shape in the spherical section in the dome during the movement was provided for by four radial expansion joints in the roof.

Louver openings were constructed in the outside periphery below the roof line and flap valves were placed in a monitor over the center of the dome to permit a quick adjustment of any difference which might occur in air pressure within the building as compared to that on the outside of the building. Even with these provisions there was considerable vertical movement at the center of the roof, giving rise to the name "The Breathing Dome". At the time of its completion it was believed to be the largest clear space under roof ever constructed.

The unique conception of the dome itself was matched by its unusual methods of construction. An illustration of this point was the assembling of the large columns. These came in three sections, and it was decided to assemble the two upper sections while lying on the ground, making it possible to reach high enough with the derricks. Then the lower sections were set up and guyed with temporary guys while the lower steel bracing was set in place. The main steel columns were entirely unsupported until the entire cable job was finished.

Considerable thought and experimentation were given to finding a proper lubricant for the points of contact or joints made necessary by the movement of the members. There were no means of getting at the bearings after erection, and it was certain, with the heavy weight upon them, that lubrication with ordinary oils or grease at time of erection, would not last throughout the Exposition. A special graphite paste was developed which dried almost immediately after ap-

plying, leaving a thick coating of hard graphite on the bearing point.

The under side of the roof of this large room being a spherical section, formed a huge sound reflector and produced some interesting acoustical effects. A man speaking in a whisper while standing at one side of the room could be heard two hundred feet away on the other side of the enclosure. A loud noise in the center of the room would produce about forty separate and distinct echoes before dying to inaudibility.

Sky Ride and Its Towers

All major expositions have felt the need of some dominant feature projecting into the air to a height considerably above all other fair structures. This feature has been designed as an architectural climax of the composition as a whole, and to give the visitors a thrill by its unusual appearance. The French Exposition had the Eiffel Tower, built in 1889. The Ferris Wheel was the dominant feature of the Chicago Exposition in 1893. Many such features were taken under consideration for use at the Century of Progress and for various reasons they were discarded in favor of the Sky Ride.

The structure when completed consisted of two steel towers 628 feet in height and 1,850 feet apart, one being erected on the mainland near the south end of Soldier Field and the other on Northerly Island.

The towers were connected by a cable suspension span which supported the track cables on which traveled ten rocket-shaped cars at a height of 219 feet. The towers were backstayed to great counter weights located 600 feet in the rear of each tower. These counter weights were designed to maintain constant tension on the cable structure during its various movements in expansion and contraction.

Each tower was equipped with four elevators, two going to the observatory floor at the 600-foot level, and two to the car platform at the 219-foot level. The observatory consisted of a two-story structure, one entirely enclosed, with ample glass sections to allow easy visibility over the surrounding country, and the other an open observatory enclosed with steel netting.

The "rocket" cars, leaving from the 219-foot level, traveled across the suspended cable way to the opposite tower, and were capable of speeds up to 500 feet per minute. The cars then passed over the rigid track section around to the far side of the tower and returned over the other track cable. Provision was made for side-tracking the cars at the rear section of the tower to permit repairs.

The rocket-shaped cars had a seating capacity of thirty-six passengers arranged in two tiers. They left the loading platform under their own power. After acceleration to the approximate speed of the traction cable, an automatic gripper engaged the traction rope which furnished the power for drawing the cars across the cable span. As they reached the other end, the automatic gripper disengaged the cars and they ran under their own power to the unloading platform. This permitted them to slow down and stop with minimum disturbance.

The Sky Ride proved to be one of the most popular features of the Exposition.

It was patronized by approximately 12 percent of the patrons of the Fair, and on one day accommodated around 55,000 people.

Inasmuch as this was a new type of structure, very careful watch was kept upon all important structural parts to assure the safety of the visitors. This necessitated a thorough inspection of the cable section between the towers, accomplished by a maintenance crew traveling over this filmy structure at a dizzy height on bosun's chairs and by other means. The maintenance work was done during the closed hours of the Exposition.

In spite of the fact that this structure was novel and untried, it had very few periods of serious breakdown, and no accidents of a serious nature occurred during its operation.

Old Fort Dearborn

In the midst of the modern structures and new materials, the faithful replica of little old Fort Dearborn stood as a constant reminder of the changes which the century had wrought. The basis for the working drawings of the fort was Captain John Whistler's drawings, dated January 20, 1808. These were part of that officer's report, on that date, to the War Department on the condition of the fort located at the bend of the "Cheykaho" river. The Chicago Historical Society, with painstaking care and a deep interest, obtained the drawings for the Exposition, with the cooperation of the War Department. The original drawings, as interpreted, were followed absolutely. It must be remembered, however, that only the fort itself was reproduced by the Exposition, and that the original included many outlying buildings, gardens, barns and stockades.

As the engineers began staking out lines and elevations for Fort Dearborn the situation was reminiscent of those early days, more than a hundred years before, when the original fort was being laboriously constructed. For here was a wilderness of sand of man's making, removed from telephone and electric power, from drinking water, food and transportation.

However, it can hardly be imagined that the early settlers had difficulty in obtaining logs close at hand, while it was now necessary to go several hundred miles for the Norway pine required to rebuild the old fort. The beginning of actual log work brought realization that there existed no modern equipment for the economic handling of logs, so it was necessary to revert to the horse, the same motive power that had been used a century before. Four lumberjacks were brought down from the Northern Wisconsin woods, to assist in cutting and hewing the logs.

A painstaking search was made for other materials sufficiently weathered to be in harmony with the fort's reproduction. Field stone which had lain in the open for years, and was of various shades, was carefully chosen. "Hand split cedar shakes" from the West Coast were selected to resemble the shingles used a hundred years before, and laid in staggered fashion with a fold of heavy mule-hide roofing between each layer of shingles to insure water tightness.

The doors and window detail gave additional difficulty, for it was necessary, in building the doors, sashes and blinds, carefully to hand-adze the surface of each

piece used. As no glass manufacturer would undertake to supply the inferior material used in 1803, except at a prohibitive cost, it was finally decided to use glass which had been rejected because of defects, and accordingly bubbles, seams and other flaws were eagerly sought.

A tall, straight spruce, seventy feet high, which was about 14 inches at the base and tapered to a 6-inch point, was selected near Shawano, Wisconsin, to be the flagpole. As shipping by rail would have required three flat cars, the tree was trucked directly to the site. The old flag of 1812, with its 15 stars and 15 stripes, was raised to float proudly over the replica of Chicago's first official building.

Beautiful Lama Temple

In 1929, Vincent Bendix of Chicago, commissioned Dr. Sven Hedin, Swedish explorer and author, to set out for Mongolia in quest of a Lama Temple, to preserve for Chicago a fitting representation of this superb architecture, so fast disappearing. Dr. Hedin selected the Golden Pavilion of Jehol, built in the interior of China in 1767. A replica of this magnificent structure was made and shipped, in pieces, to Chicago. It was a coincidence that the arrival of this treasure came at a time when public interest in the Fair was rapidly gaining momentum throughout the metropolitan area. Mr. Bendix' thoughts, consequently, turned to the Exposition as the proper place to display the shrine, and an agreement was reached among the Exposition, Mr. Bendix and U.S. customs authorities for the placement of the Temple on the Fair grounds.

Dr. Hedin had spent two years on his work of reconstruction. Some 28,000 pieces of wood had been carved and fitted. Each piece was marked to denote its position in the building, and they had been fashioned with such nicety that they could be fitted together with dove-tail joints and dowels. Great was the consternation, when the boxes were opened up, to find that the markings were in Northern Chinese characters, and the work was held up for several days until Chicago's Chinatown had literally been scoured to find someone who understood the markings, and the architecture as well.

The secrets of Chinese painting had been passed down from father to son through generations, and it was necessary, in order that the work be correctly done, to bring painters from far-away Peking to retouch, with imported Chinese paint, those sections which had been damaged by salt water, and to prepare the material for the non-painted portions.

The double-decked roof of the Temple conformed to the original, and 25,000 copper shingles, overlaid with pure leaf-gold, crowned the pavilion in a blaze of glory.

Maya Temple

The Maya Temple, reproduced at the Exposition, was a section of the Nunnery of Uxmal, one of the ruined cities buried in the jungles of Yucatan. Relic of the lost Mayan civilization, it was perhaps the greatest achievement of early man in America and is considered the finest example of Mayan architecture.

An expedition from Tulane University, which obtained the architectural data and the casts of statuary and ornaments for the Temple's reproduction, was financed by A Century of Progress. Under the leadership of Dr. Franz Blum, a group of architects, surveyors, modelers, plaster casters and photographers spent two seasons in Yucatan making accurate measurements and casts for the Temple, and the work, thereafter, was continued in the University at New Orleans.

Although a reproduction of the entire structure of the Temple and its wings had been contemplated originally, it was soon realized that this would require such an acreage of enormous buildings that curtailment of the plan to the showing of one wing of the Nunnery, and that on a slightly reduced scale, was found necessary.

The Maya Temple was reproduced as nearly like the original, both as to architectural detail and color, as the data available and the necessity of operating as an exhibit building would permit. The original building was built of stone—the reproduction of plaster and wood.

The purpose of placing this exhibit at the Exposition was to give the visitors an insight into the life and culture of one of the most advanced peoples who inhabited this hemisphere before the coming of the Europeans.

The material exhibited in the building consisted of artifacts and sculptures of the Mayas—some original and others in reproduction, ancient and modern Maya figures in costume engaged in characteristic work, and paintings and murals depicting the culture of these peoples.

To Dr. Fay-Cooper Cole, head of the Department of Anthropology at the University of Chicago, and to Dr. Franz Blum of Tulane University, we are indebted for the general picture presented and for the details which gave it life.

Fencing

Careful thought was given to the subject of fencing in the grounds during the fall months of 1931. It was, of course, highly important that the fence be satisfactory from the point of protecting the grounds, and that it be of pleasing appearance and minimum cost.

A cyclone wire fence was considered, but was deemed unsatisfactory because of the open view through the wire mesh. A board fence either of solid or picket type, was proposed and found to be cheaper, but too easily scaled. Plans were drawn for a solid wooden fence, much more difficult to scale, consisting of large plywood sheets applied on a heavy wooden frame on a saw-tooth plan. This, however, proved to be too costly. Some time later, fabrication of the corrugated metal type of fence was worked out on an economical basis, and this fence was subsequently contracted for and built.

Other People's Construction

The construction work carried on by other organizations than the Exposition represented largely whole buildings, each devoted exclusively to a single exhibitor or concessionaire. The problems of erecting these coincided with those which con-

fronted the Exposition, with two general exceptions. Probably none of these participants had financial anxiety except to keep costs within appropriations, and these buildings offered a greater field for experimentation than the Exposition's own buildings.

The story behind the large buildings for single exhibitors was largely the same as that of the Fair's general buildings. The history of the small buildings was highlighted in the eleven modern homes, constructed in close proximity to one another, and invitingly landscaped.

As an avenue of approach to putting into practical use many of the suggestions offered by the exhibit buildings, this colony of homes was highly important. In the building of eight of them, prefabricated units were employed, and the safety factors involved in the increased use of steel were easily demonstrable, substitute materials were explained and made recognizable, and the definite economies coincident with this type of construction, convincingly illustrated. Elimination of external adornment and dependence on light and color for decorative effects, so integral to the modern architecture, were shown to be a natural accompaniment of the new construction.

As an embodiment of new building principles and materials, the frameless steel house had been a development of keen interest to both the industry and the layman. Classically simple in line, the exterior wall surface of porcelain enameled steel panels, its fire-resistance, lighting, safety and termite-proof qualities were self-evident. These houses revealed that the proved economies of factory production of prefabricated units, and ease and speed of their assembly, were compatible with variety and individual distinction. Each is described in the chapter on industrial exhibits.

The Building Code

The more people there are congregated within an area, the greater are the hazards of fire and accident occasioned by unsafe construction. In a project like a fair, which is continuously in the public eye, and where its success can be blocked by a single catastrophe, it is essential that visitors have no need to fear for their personal safety.

In the normal routine of living, building codes are established by the various city communities. The provisions of such codes are usually exacting in order to ensure that the buildings erected will not deteriorate to the point of being dangerous to life and property during the entire period of their existence.

A Century of Progress, even though not within the City of Chicago jurisdiction, gave consideration to asking the city to take jurisdiction over its construction because of the confidence it would give to those who would be its guests. There were two serious drawbacks to requesting city inspection on the basis of the Chicago code. First, the Chicago code was not drawn for temporary structures and compliance with it would necessitate a durable type of construction unwarranted for the Exposition's short duration. Also, the Chicago code had been drawn before development of the type of materials the Exposition intended to use,

which would be a handicap too great to overcome within the funds available without changing the city code, for which there was no time.

For these reasons, the Exposition took advantage of its location and requested the South Park Board to prepare and authorize a building code to apply to the Exposition. As a result, a committee was established, composed of prominent engineers, architects and members of the Board of Fire Underwriters, to draw up a code.

Taking as a foundation, the national codes of the underwriters and recommended codes of the Bureau of Standards, of the U.S. Department of Commerce, a proposed building ordinance was prepared and submitted to the South Park Commissioners. Engineers of the Board of Underwriters on this committee recognized that unusual precautions were to be taken in the Exposition's buildings to prevent the growth of incipient fire, such as the installation of automatic as well as manual fire alarm systems to be connected not only with the Exposition's own fire department headquarters, but, also, with Chicago fire department headquarters. They also recognized that the organization was to be set up in such a manner that there would be almost daily inspection of the complete plant to suppress fire and other hazards.

The proposed code frankly recognized conditions as they were to exist on the grounds, and also made ample provision for the safety of the patrons and the Exposition's personnel. At the same time they did permit the maximum use of economical materials and building construction methods.

When the code was submitted to the South Park Commissioners, a committee was appointed to review it. Upon the recommendation of this group of prominent Chicago architects and engineers, the code was adopted and the reviewing committee was appointed by the Commissioners to act as the code executors.

Buildings already erected were first checked. It speaks well for the design and construction forces that few changes were required. The checking of buildings in the process of erection came next, and then future plans and designs. The Exposition, and others erecting structures, were required to procure both erection and occupancy permits from the Code authorities.

The cooperation of the Code authorities in this basically important work was outstanding. No members of the Exposition's own staff worked more faithfully than they. For days and nights at a stretch they labored to aid in pushing construction, but never once did they falter in enforcing the highest degree of safety.

That there were no structural failures was a high tribute to their ability and integrity of performance. Their inspections, moreover, did not end with the construction period, but continued with commendable frequency throughout the entire period of the Fair's operation.

Prime Factors in Progress

In retrospect, the whole building phase resembled a jigsaw puzzle. The pieces were there if only they could be identified and assembled properly, in the time available. Occasionally one piece was lost and it was necessary to stop and make

another, which might be discarded in turn when the right one later turned up.

The fact that the goal was reached by the prescribed date can be credited to a combination of factors, the failure of any one of which would either have delayed the opening or have occasioned one characterized by incompleteness. On the other hand, no single one of these factors could be credited as *the* reason for success.

The relationship with contractors was of such basic soundness that it expedited work at every point. In the first place, lack of construction activity incident to the then current depression made securing a contract an important matter for the contractor instead of just another job. Prompt cash payments to him enabled a quick turnover of his capital and his taking advantage of a buyer's market in equipment and materials. No large and obstructive inspection force was placed over the contractor; rather, he was put on his mettle to produce a finished job in his own way in the shortest time.

The Fair exercised only advisory superintendence as long as the work proceeded according to the contract. Dividing the work into many individual contracts limited the responsibility and assured a more personal direction by the contractor himself, and also induced much good-natured rivalry. With few exceptions, the result was a cordial response to every effort which was made.

Fine Cooperation from Labor

Labor took a high place in getting A Century of Progress built. The Exposition itself was never involved as a principal in any strike, though it was many times in the position of mediator. In the early days of construction, a few cessations of work for short periods occurred while labor union jurisdictions were being determined. Such questions were raised because of the new materials and methods devised for the special purposes of the Fair, for which there were no union precedents. To have these settled before the critical periods of construction arrived obviated disputes and stoppage of work which would have been disastrous.

When exhibitors moved in, new labor problems developed over their installations. Some exhibitors were employers of union labor and others were not. Many who had had difficulties in building previous exhibits expected trouble and did not believe that the Exposition could maintain the policy of using union labor itself and still protect exhibitors in following whatever were their customary policies.

One of the most interesting strikes, although of short duration, was that of structural steel workers on the Sky Ride towers, shortly before the opening of the Exposition. It was unusual in that the strike was settled and the workers ordered back at the instigation of the national officers, without any action by Exposition officials. The quick settlement testified to the cooperation organized labor gave throughout the construction and operation periods.

A committee of the directors of exhibits, works and operations was formed to anticipate and prevent strikes in the final months. Colonel H. B. Hackett, well known in both labor and professional circles, became a member of the staff with the sole duty of avoiding or solving labor difficulties.

Full precautions were always taken to secure a maximum of workman safety and favorable working conditions. Such a low accident record resulted that the Fair had the pick of skilled men, even on hazardous jobs.

Some place or another, almost every question that arises in labor disputes came up. The sense of responsibility shown by the unions, especially by the American Federation of Labor, and the considerate treatment of these problems by the contractors, the exhibitors, and the concessionaires, made the relations between union labor and A Century of Progress a model.

Progress in construction was greatly accelerated above normal for several reasons. First, there was a surplus of materials, men and equipment. Second, the light-weight units and factory-made or prefabricated pieces cut erecting time. Third, the site itself was not only unusually accessible, but after the initial drawbacks were overcome, materials and equipment could be easily moved throughout the grounds. Fourth, the length and narrowness of the site was for once an advantage in that it enabled many operations to proceed simultaneously unhindered, by one another. Fifth, practically all projects, especially the large ones, got under way early enough to take whatever time was needed to do the job well. Last, but by no means least, the various inspections by fire, code, and other authorities were made promptly and expeditiously.

In the building schedule more than thirty structures had been completed or were under way at the end of 1932; the building work was two months ahead of schedule. Of the other strictly Exposition work much of the water-supply distribution system was underground, and a 30-million gallons per day pumping station had been constructed. The sanitary and storm sewers were virtually completed, and the pumplog conduits for electric cables were in.

Substantially, the work remaining to be done consisted of finishing operations, the construction of merchandising stands, comfort stations and other small structures. In brief, construction operations were entering the final stage at the beginning of 1933, and all had been accomplished substantially without overtime work charges.

In spite of this there was a frantic push at the end. The opening was moved up five days. During May, there was such a continual downpour of rain that the landscaping could not go on, hands instead of machines had to dig miles of telephone trenches, the paint was washed off, the roofs leaked under the deluge, and all work was delayed. It was a perspiring, weary force that lifted their faces to the sun on the morning of May 27, 1933, but a jubilant one because its work was done and ready for the opening two hours ahead.

ELECTRICAL SYSTEM

The throngs of visitors who nightly gathered in the Court of the Hall of Science to applaud the famous "Arcturus ceremony" were thrilled by their thought that the Exposition lights were turned on by the rays from a star, 40-light years from the earth. They had little, or no, knowledge that the "phenomenon" they came to see was made possible by the solution of one of the numerous phases of the Fair's electrical supply problem.

In respect to its utilities the Exposition was akin to a large city, but compacted within a small area with consequent abnormalities developing unique problems requiring, in many cases, unusual solutions. Some were related to the unpredictable movements of Exposition population; others to variable demands for illumination. The presentation of exhibits added tremendously to the electrical load and the windowless buildings required electrical energy outside the normal hours of darkness.

The big problem was to supply enough energy for a maximum consumption twelve to fifteen hours a day, seven days a week, with a reliability of service equal to that provided for a municipal distributing system.

The early studies were centered on endeavoring to estimate the amount of energy that would be required. A list of classes of needs was compiled and certain assumptions made, of power needed for each category. In every instance, these estimates carried an item to cover unanticipated demands.

Inside the exhibit buildings, 2 watts per square foot was set for direct booth lighting, and an equivalent foot-candle power for all indirect lighting. Added to this was the power load for ventilation and emergency lighting, and two

watts per square foot for exhibitors' purposes. Actually, the exhibitors' requirements varied from 4 to 50 watts per square foot, and it was later necessary to increase all feeders on all buildings to meet their needs.

Concessions were set up at 6 watts per square foot. Display windows were provided with 150 watts per linear foot of glass, while one-half watt per square foot was allowed for storage spaces, outside walks, and similar areas.

Exterior building illumination was fixed at 2 watts per square foot; the requirements for the amusement area were set at 1800 kilowatts; and a total of 1000 kilowatts was added for special decorative effects, such as fountains. Because it had not been projected, the Sky-Ride was not included in the original design, but was later added at 2000 kilowatts.

It was fully realized that the original estimated requirements would represent simply a start. It was recognized that as plans for the Exposition's own buildings advanced, and as exhibits and concessions were contracted for, many items must necessarily be refigured, perhaps time after time. But here, at least, was an estimate that would enable proceeding with the design of the basic system. As soon as the preliminary estimates were completed, there began again the eternal game of pushing work to early completion and, at the same time, holding it back until the factors which should mould it could definitely resolve themselves.

As far as it proved possible, without having a definite knowledge of what funds would be available for decoration, exterior illumination of buildings was designed at the same time the architectural plans were prepared. It was possible to use the actual connected load in designs where neon tubes and appliqué lighting were required.

Standardization of Details

Throughout the course of design, the standardization of details was especially emphasized. Special materials were designed only in cases where the standards were too expensive or unadaptable. A high degree of standardization was attained in the construction itself, where full advantage was taken of labor-saving tools and methods. Open-cleat wiring was used in protected places; emergency lighting was installed in conduit; and there were no restrictions on raceways for feeder distribution, on small wireway for sign lighting, or on bench work.

Motors, power, and exterior lighting were installed in metallic conduit or raceways. The result was a large saving in the cost of electrical work, since ordinary installations could be changed into factory construction. The larger portion of the work was done at a bench, rather than at the place of installation.

It early became evident that, instead of installing a power station, it would be more practical to purchase electrical energy from the Commonwealth Edison Co. which supplied the metropolitan area. Current was fed at twelve thousand volts from the company's station in Soldier Field and four thousand volts from the station at 31st Street.

The Fair paid for the high tension feeders to the substations. The original cost of the installation of the main transformer equipment, and rental of the equipment, while met by the Commonwealth Edison, was charged to the Fair at the rate of 58 mills per kilowatt hour until the construction and rental cost were amortized. The Exposition constructed the building for housing the main and secondary switching equipment, and built the distribution system throughout the grounds. It contracted for the necessary switching equipment with the Commonwealth Edison Co. on a rental basis, the equipment to be returned to the company at the conclusion of the Fair.

As power and light would be required in all portions of the buildings, it was decided to use a 4-wire, 3-phase, "Y"-system. The lead sheath was used for the neutral return in the 4000-volt underground system; and an insulated wire for the neutral return in the 120-volt system within the buildings, and for the secondary underground system.

The general distribution system was designed as a 12,000-volt feeder to the substation in Soldier Field, transformed to 4,000 volts, switched with solenoid operated oil switches, an underground 4,000-volt feeder distribution system to all transformer vaults north of 31st Street; two 4,000-volt feeders from the Commonwealth Edison 39th Street sub-station to property at 31st Street, and these two feeders underground for feeding the south end of the Fair; and a tie between the two systems, feeders No. 2 and No. 43, for emergency use at 31st Street.

There was an underground secondary system for feeding all concessions and isolated buildings which were not large enough for individual transformer vaults. Transformer vaults were located in buildings and on the grounds so as to give a minimum of feeder lengths.

Wooden Pump Logs

After comparison of cost of several types of duct construction, and in view of the high probability of uneven settlement of the made land, it was decided to use a four-inch wooden pump log in approximately 10-foot lengths as cable ducts. Wood manholes were used in all places except where located in roadways. Duct lines were planned under planted areas of grass plots where they would be the most accessible and where the sprinkling would keep the duct lines wet with a consequent better conduction of heat. Eleven feeders extended from the substations to various portions of the grounds, with emergency switching equipment to assure feeding either from Soldier Field or from 31st Street.

The feeders to the island area were installed under the planking of the 16th Street bridge, the duct lines being secured to the steel work. All high tension cables terminated in the transformer vaults, of which there were 53 ranging from 75 KVA to 21 KVA. These were of standard design and fireproof construction, with a ventilating system so arranged that the fans would stop and louvers close in case of fire.

The switchboard rooms were adjacent to the transformer vaults and had standard equipment. At the top or bottom of the switchboards a cabinet, or

large raceway, was installed for the distribution circuits leaving the board. The connection between switches and the raceway above the board was in conduit. The connection from switches to busses was open type of wiring back of the board.

The feeder circuits inside the buildings were designed to give the least amount of circuit wiring. Raceways were used for all main feeder circuits. These raceways held 16 2/0 cables in 4 circuits of 4 cables each. The circuits were separated by 3/16" asbestos boards. The raceway was designed for center hangers and outlet boxes were fabricated onto the raceways in the manufacturing plant every few feet to reduce the runs of the secondary wiring system.

Raceways were standardized in design. Fuse boxes could be affixed at any point, and sufficient bolt holes were provided that the raceways could be conveniently attached to joists irrespective of the spacing between the joists. Cables were standardized at 2/0 stranded cables covered with one layer of paper, rubber and braid. The layer of paper between the copper and rubber made the cleaning of cable for joints and taps much cheaper.

The feeders for small buildings, concession stands, etc., were distributed underground in 4 in. pump log, using as standard, 4/0 rubber and lead cables. Hand holes were provided at frequent intervals for taps, and the pump log was cut for taps where the run was too long to a hand hole.

The feeders for the road and path lighting were laid in a shallow trench and covered with earth. Lead-sheathed cables were used for the phases, and braid-covered for the neutral. All cables were painted different colors to help in phasing. All circuits were for three-phase service. Where cables were installed under the roads and paths, pump log conduit was used for protection. Generally, switches were not provided at cut-out centers, and centers consisted of fuse cabinets where the branch circuits were fused. Secondary circuits usually were fused at twenty-ampere capacity. All cut-out centers were standardized at four-circuit porcelain fuse blocks installed in a 5 x 9 in. sheet metal box secured to the raceway; larger branch circuits by porcelain blocks and cartridge fuses, the boxes supported by the raceway. The isolated and large fuse centers were constructed of porcelain fuse blocks, ranging in size from four circuits to sixteen circuits, installed in sheet metal cabinets. The larger size fuse panels were generally provided with main safety type disconnecting switches.

The circuit wiring of all buildings was standardized as follows: 1) Power wiring in conduit; 2) Emergency wiring in conduit; 3) Exterior wiring in conduit; 4) All other wiring was open-cleat wiring in protected places and metallic raceway or conduit in unprotected places.

The open cleat wiring was installed by using porcelain cleats fastened to the steel structure by a specially designed holder that could be readily snapped into position. The pigtailed were made of a standard length that would allow for a variation in fixture spacing, and were easily erected. In all pigtailed, and in places where the wire was liable to come into contact with the building, the wire was covered with loom.

Emergency System

The buildings being constructed without windows and skylights necessitated the employment of an emergency lighting system to prevent a panic in the event the electrical supply should fail or be interrupted for a time. This emergency lighting system was required to be from a separate electrical supply and capable of supplying light for a sufficient length of time to clear the buildings of visitors. It was decided to provide a system of lights of such an intensity as to be safe for walking, these lights to maintain their brilliancy for twenty minutes. The source of energy was to be other than the regular feeder system. Two systems were considered: an independent feeder system to supply emergency lighting, or battery sets located in all buildings. Batteries were selected, because of the lesser cost.

The emergency lighting system as constructed, consisted of independent circuits with all wiring in conduit, an energy supply of standard 13 or 15 plate automobile batteries, automatic throw-over switches and tungar battery chargers.

The original high tension 12,000-volt system was designed for a maximum demand of 18,000 KVA. Two months before the Exposition opened, it became evident that this must be increased to 24,000 KVA. An additional feeder was installed at the substation. After the Fair opened, still another feeder was added. Fortunately, the transformer vaults had been constructed large enough to accommodate the unanticipated load. Due to the unexpected increase in requirements of exhibitors and concessionaires, the feeder systems of practically every building had to be increased.

During the construction period, the interruptions to service were remarkably few. The largest number occurred while changing from temporary to permanent connections and during the rearrangement of circuits. Cable injuries caused by the planting and excavating work occasioned others. Some of the interruptions were of a peculiar nature and it is remarkable that no one was hurt. In one instance, a workman sawed partially through a 4,000 volt feeder, burning out a large section of his saw. In another case, a hand ax cut through a pump log and into the feeder.

From an engineering standpoint, the electrical supply system was one of the Fair's outstanding successes for which the fine cooperation among the architects, engineers, manufacturers, contractors, and labor unions was largely responsible. This, perhaps can be more fully appreciated when it is realized that at no time before the Fair opening could this system be thoroughly tested. On the opening day of the Exposition, for the first time, a capacity load went out over the cables.

The Telephone Service

The installation and operation of a telephone system for A Century of Progress presented numerous unusual problems. The greatest complication perhaps arose from the fact that although the service had to be as effective

at all times as that in the business section of the city, it was to be relatively temporary, and the traffic load would of necessity vary greatly from time to time, and could not be accurately estimated.

Also, in addition to regular telephone service for Exposition officials and employees, the wire installations had to handle fire and police protection, traffic, telegraph, and wire services for broadcasting. Although exhibitors and concessionaires desired their own telephone service, and the telephone company installed pay booths for visitors and the general public, the cable installation, and the placing of the telephones at all times had to be done according to one general plan, developed by the Exposition engineers.

When work began on the Administration Building, the telephone problem was created, and first steps were taken toward the development of a comprehensive system. The system started with the installation of a two-position private exchange board, with an ultimate capacity of two hundred dial terminals and twenty manual lines. By June, 1932, the facilities were taxed to capacity and additional installations began.

Despite the careful surveys by engineers for the Exposition and the telephone company, the telephone traffic was constantly proving to be far in excess of anything that had been anticipated. Four times before the opening date walls and ceilings of the Administration Building were ripped open to permit additional installations. As each new building was finished, telephones and private switch boards were installed, and they in turn, as they proved insufficient, necessitated additional facilities.

The running of the cables presented another problem. It was essential that they be protected, to permit uninterrupted service, but, at the same time, routine methods of installation were not practical because the expense could not be justified for a relatively temporary service. It finally was decided to place the larger cables on the iron fence running the length of the grounds, through buildings, and in conduits. Smaller cables were laid in trenches, covered with boards and then with dirt.

The entire program demanded close cooperation between the installers and landscapers. A further complication arose just prior to the opening date when days of pouring rain made a muddy morass of many of the pathways alongside the streets. This hindered cable laying to such an extent that there was a temporary breakdown of telephone service. Special lines were strung, and service was resumed. On opening day there was little difficulty as installation of the regular system was nearly completed.

Soon after the opening, every building on the grounds had adequate service to central company switchboards, and had direct connection with every other building, including police stations, fire stations, fire departments, hospitals, and public pay stations which were scattered at strategic spots over the grounds. In addition, the system included fire and police alarm boxes at regular intervals along the Exposition streets.

Public Address System

It was desirable to have a sound distribution system to broadcast throughout the grounds, ceremonies, music, police and fire calls in code, and emergency announcements to employees and visitors. After the system had been installed it was interconnected with the large broadcasting companies' systems, so the programs originating in their studios could be spread over the grounds, or, the reverse, programs originating in the grounds could be sent out over the networks.

The 1933 public address system consisted of forty-three locations and one hundred and eighteen speakers operated by fifty-seven 24-watt amplifiers controlled from one main control room at the Hall of Science and two sub-control rooms at the south end of the grounds. The speakers at the south end were too distant to operate properly without a booster control panel. The two sub-panels had one channel and dual turntables and the main control room had three channels, making it possible to broadcast five programs simultaneously.

It was the largest system built up to that time, having an approximate output of fourteen hundred watts, and considerable thought and experimenting had to be done to locate the speakers so it would be possible to cover the grounds without any blank areas and without overlapping.

Fire Alarm System

Fire prevention and protection went hand-in-hand with building construction. The insurance agents and the Chicago Board of Underwriters were especially helpful in suggestions and in the design and testing of materials. The Aero System of automatic fire protection was adopted. It was believed superior to the automatic water system because it offered the opportunity of discovery of fire as soon as possible; it located the fire and restricted its damage to a small area, and at the same time did the least damage to exhibits.

Hose risers were installed in such positions that all portions of a building could be reached with a one and one-half inch hose not exceeding seventy-five feet in length. Automatic fire alarm boxes were installed on the exterior of all buildings.

Fire protection equipment during the construction period, consisted of water barrels and pails distributed throughout the buildings. In the Hall of Science, which was built a year before the Fair opened, three electrically driven fire pumps were installed. These pumps were connected to the Aero system in such a manner that the system would start the pump in operation.

A liberal supply of hand extinguishers and water extinguishers were distributed throughout the various buildings, and Aero boxes of the A.D.T. system were installed in prominent places outside of buildings.

No account of operations is complete without mention of C. H. Thurman. Working out from the General Manager's office, he helped to establish every department. This experience indicated his selection as Chief of the Public Protection Division. To his ever-watchful care and good judgment may be charged the unusual record made in that field.

WATER SUPPLY

When construction commenced, water was so immediately imperative for such a variety of purposes—toilets, fire protection, drinking, cleaning, landscaping, building—that its supply was one of the first technical studies made. With the lake paralleling the grounds, and a complete city system just over the railroad tracks, yet with none that could be used, it brought to mind the lament of the Ancient Mariner, "Water, water everywhere and not a drop to drink."

In designing the water system, these factors were taken as the controlling ones;

First, the initial cost should be held at the absolute minimum. The use of expensive materials of usual durability was considered entirely unjustifiable for a project of such short life. Second, refinements of the project, such as filtration of water, while desirable, could be omitted because, if included, it must inevitably be at the expense of some other project either more necessary, or more valuable. Third, provisions governing it were not to be based on peak requirements which might be reached on only one or two occasions during the entire summer.

The amount of water needed was necessarily an assumption. Because this problem was so basic, its treatment will be given in some detail. Its solution depended upon attendance, the distribution of that attendance around the clock and on sections of the grounds, and upon the proportionate quantities required for its various uses.

In selecting answers to these questions, ordinary municipal experience was of little assistance, because cities are built to last, and have known customers with known wants. Pertinent data from other fairs was set up. Especially helpful



Looking North from 31st Street.

Dome of Travel and Transport Building.





Towards Lake Michigan from West Skyride Tower.

Chrysler Featured a Testing Ground.



here was the assistance so ably and cordially given by the officials of the Canadian National Exposition, at Toronto.

The uses were classed as domestic, operation, exhibition, and fire protection. The domestic group was that used for drinking, in the kitchens, and for toilets. It was obvious that the domestic use would vary with the attendance, for whatever hours the grounds were open to visitors. The largest single item in this classification was toilets—2,843 were installed, and also a total of 30 drinking fountains which were circular structures with fifteen individual fixtures each. It was estimated that each person on the grounds would use twenty gallons daily. Culinary purposes, determined largely by data supplied by Chicago restaurants, increased the per capita use by five gallons, giving a maximum rate of 11.6 million gallons per day for the domestic group, with the peak demand between 5:00 and 6:00 p.m.

Operation uses, in direct contrast to the domestic, would be little affected by attendance, being actually at their heaviest during the hours when the grounds were closed. This group would be dependent on the weather and the extent of cleaning, sprinkling, street flushing and stock watering. It was considered that the daily application of water between 11:00 p.m. and 9:00 a.m. of $\frac{1}{4}$ inch over all "grass areas" and $\frac{1}{2}$ inch over walks and roads would be sufficient. This was figured at 2.35 million gallons per day. Other uses were classed as miscellaneous, and assumed at 1.73 million gallons per day, and continuous over the entire day.

Quota for Exhibit Group

The exhibit group use would be the most constant, but uncertain until every individual exhibit was designed. Use for this group was fixed at 4.3 million gallons per day, to be practically constant in open hours. This assumption was made on the basis of $\frac{3}{4}$ gallon per minute for each 250 square feet of the total of one million square feet exhibit space probably requiring water. Only a very small allowance was made for "display water", which included fountains and other decorative features, as this would be either re-circulated or pumped direct from the lagoon.

Five thousand gallons per minute was allowed arbitrarily for fire-fighting, making a total of 26 million gallons per day as the estimated pumpage rate. The water requirements for sanitary sewage flow were placed at nearly 18 million gallons per day, with a 6:00 p.m. peak. This allowed discharge through storm sewers into the lake of excess and spent water used for sprinkling, street flushing, and part of the miscellaneous uses and overflows from display fountains. Infiltration and leakage were placed at a half million gallons a day.

Storm sewers were planned on the basis of a storm equalled or exceeded four times a year. No effort was made to assure adequate drainage for a severe storm. Since exhibit buildings had no basements and grading was well done, there was little or no danger of flooding buildings. The soundness of this conclusion was amply proved during operation, even though one Boy Scout contingent can

testify to a hurried removal of their beds into the Hall of Social Science in the middle of a stormy night, when their camp was drowned out for a few hours.

Solutions crystallized with decisions on construction. As an area became earmarked for certain purposes its water needs were plotted, with an allowance of 10 to 30% added to cover uncertain factors, dependent on the size of the area and its fire hazards.

Water could be drawn from the lake through an independent intake, by connection with a city intake tunnel, or from the city mains. After preparing estimates for almost a dozen projects and consulting the city authorities, it was decided to use a city intake tunnel, chlorination, and distribution through a single system of mains. The City Council passed an ordinance authorizing the Fair to tap the tunnel from Four Mile Crib. The tunnel is 65 feet below lake level, with the water surface in the shaft standing at 10 or 12 feet below lake level during pumping. The connection to the Fair's pumping station was made with a 36-inch suction pipe.

The water pumping station was located at 11th Street and Park Row, adjacent to the Illinois Central Railroad, and about a half-mile from the Fair grounds. Three motor-driven centrifugal pump units, each with a capacity of 10,000,000 gallons per day, were chosen as the size and type of pump best suited for use. The personnel of the station consisted of four operating engineers and a chief engineer.

Water was delivered into the distribution system at 75-pounds pressure. The high pressure not only permitted the use of relatively small pipe sizes (from 24 to 6-inch), but also provided sufficient pressure to permit a number of direct hose streams without the use of pumpers in case of fire. In designing the distribution system it was assumed that during periods of maximum normal use, plus the full allowance for fire-fighting at the extremities of the system, the hydrant pressure should not be reduced below 20 pounds.

A single 30-inch main extended from the pumping station to a connection with the distribution system proper just north of Soldier Field and west of the Hall of Science. This main was carried across the Eleventh Street viaduct over the Illinois Central tracks by means of brackets attached to the viaduct girders. Where exposed it was insulated against freezing.

Layout of Water System

The water was distributed throughout the grounds by means of mains ranging in size from 24 to 6 inches. A single large main extended the full length of the grounds on the mainland, and another on the island. Branches and loops of smaller size served the individual buildings, building groups and fire hydrants. A 16-inch main across the 16th Street Bridge, a 14-inch main across the 22nd Street Bridge, and a 6-inch main across the 12th Street Bridge connected the system on the island with that on the mainland.

These loops were so arranged that breaks on the distribution stem would not stop service. Wherever possible, the loops were carried through the buildings,

where they served not only as reinforcement to the general system but also as a part of the building supply.

Connections were made at a number of points to existing water mains. These mains were of limited capacity, but they furnished water for construction purposes, and were available for emergency use in case of temporary shutdown of the main supply.

Underground mains were constructed of spiral electrically welded steel pipe. Thicknesses ranged from 6-gauge (0.203 in.) for the 30-inch size to 10-gauge (0.141 in.) for pipes 14 inches in diameter and smaller. All tees and crosses were of heavier material than the pipe, and so banded as to be of equivalent strength. Sleeve couplings were used on all straight runs, with flanged connections at valves.

Six-inch tee openings with blank flanges were provided at frequent intervals to facilitate the installation of additional loops, hydrants and service connections. Hydrant connections were valved at the point of take-off from the main and were 6-inch, class B, cast-iron pipe. Hydrants were of the Chicago type, with one 4½-inch pumper connection and two 2½-inch hose connections. About 100 hydrants were provided, so distributed as to give maximum protection to all buildings and building groups.

In general, the mains were laid relatively shallow, the cover ranging from 2½ to 4 feet. A field test of 100 lb was applied to each section of the system, immediately after laying and before the trench was back-filled. Concrete anchorages were placed at all bends and tees and proved adequate under test to resist any tendency toward failure of the line from kicking out under pressure.

Special protection was provided to prevent collapse of the pipe from external loads at all roadway crossings. Although extreme precaution was taken in laying the steel water piping, difficulties, through rusting, were still encountered because of the corrosive acid action of the cinder-filled ground and plastic clay. All structures were kept above the lake level insofar as practicable, with the consequence that there was little trouble with ground-water. For the most part, skeleton sheeting in trenches was sufficient.

City Sewers Accessible

The removal of the sanitary sewage was effected by discharging it into two existing city sewers opposite the Fair grounds west of the Illinois Central right-of-way. The only alternative would have been the carrying of all sewage to the south end of the area and there discharging it into an existing 20-ft sewer in 39th Street, and cost estimates showed this would be a more expensive method.

These sewers of sufficient capacity were found to be accessible at 35th and 22nd Streets, and two separate systems utilizing these as outlets were developed. Sewage from south of 31st Street was led to a pumping station south of the Travel and Transport Building and there pumped through a 14-inch force main under the Illinois Central tracks to the 35th Street sewer. Sewage from north of 31st Street, including the island, was led to a pumping station south

and west of the General Exhibits Building and there pumped through a 22-inch force main under the railroad tracks to the 22nd Street sewer.

This northerly system also included two other pumping stations, one on the island, which pumped the sewage through a force main across the 23rd Street bridge, and a booster station about 1,600 feet south of 23rd Street, which elevated the sewage from the relatively low areas to the south and discharged it into a higher sewer flowing northward.

Both vitrified and concrete pipe were used, the sewer sizes ranging from 8 to 42 inches for the northerly system, and from 8 to 21 inches for the southerly. With no basement service to be provided, portions of the lines were laid with as little as 2 ft. cover over the pipe. The maximum depth of cut was 18 ft., occurring on the 42-inch line leading to the main pumping station of the northerly system.

The four sewage pumping stations were of similar design. Each comprised a wet well of limited size and a dry well in which were set three vertical electrically driven centrifugal sewage pumps. Each pump had a capacity equal to one half the estimated maximum hourly sewage flow tributary to the station, so that in case one pump was out of service the other two could meet all pumping requirements. Operation was automatic and controlled by float switches. The pumping stations were constructed of reinforced concrete and were of minimum dimensions. Force mains were constructed of spiral electrically-welded steel pipe, except for the cast-iron crossings under the Illinois Central tracks.

In the matter of storm sewers it was decided to serve individual areas with relatively small drainage systems that discharged into the lake at convenient and frequent intervals. The catch basins and manholes for the storm sewers were for the most part constructed of concrete-block masonry, though a few were made of brick. The sewers themselves were of either vitrified tile or concrete, laid with cement joints. Wherever feasible, existing stormwater sewers of the South Park System were utilized.

All materials were purchased by the Exposition in large quantities at favorable prices, and furnished to the contractors at the site of work.

Chapter 27

CHANGES FOR 1934

A Century of Progress broke numerous traditions and established many precedents, but none more far reaching than to continue for a second year in 1934. All previous major American fairs had operated for one year only, and without exception had finished with large deficits. There is a definite connection between these two facts, but it is not conclusive, for while the second year's operation made it possible for A Century of Progress to pay all obligations in full, subsequent American fairs which emulated the two-year example were not so successful.

All through the 1933 operating season stern instructions were given to all staff members not to consider the possibility of a repeat performance, and all discussions of the subject were taboo, even at closed staff meetings. During the stringency of the depression, with cash funds at a low ebb, it was logical to reason that any intimation that the Fair would be held a second year would cause many to postpone their visit until "times were better." It was sufficiently difficult to overcome the natural inertia to travel without adding a valid reason for delay. Then, if the first year were not a popular success there would be neither incentive nor capability of doing a repeat performance.

But the season of 1933 was a glorious success: more people had attended than at any previous celebration, the exhibitors were well satisfied, most concessions had been profitable, some fabulously so, and every activity of the City of Chicago had benefited by the millions of fresh money that had been transfused into its financial arteries. Yet there was no popular demand for a continuation for the simple reason that since it had never been done, it was not considered possible.

The decision was made suddenly and unexpectedly near the middle of October. While many pros and cons could have been advanced, there were two controlling reasons. First, the Fair had been operating at a substantial daily profit and it was believed that while the attendance would be somewhat smaller, the income would be larger due to more favorable contracts and the increased efficiency of experience, and thus there would be a worthwhile net gain. Second, there had been a grim determination to repay the Gold Bonds in full. Many people had made great personal sacrifices to purchase them, and loyal guarantors were already under severe strains from the depression then in its fourth year. By October, 1933, 50 percent had been paid on the Bonds and there were nearly two million dollars in cash on hand, enough to accomplish the demolition and pay a few more percent, but still a long way from the fulfilment of what was considered a deep moral obligation. When all was said and done, it was the second motive that was decisive, for there was a great popular demand to run a third year, and the reasons were just as cogent, but the incentive was gone—the Bonds had been paid in full.

But it was not that easy. A tangled web of legal and financial threads had to be unraveled. All contracts, legislative acts and even the Trust Indenture had contemplated only one year, and had been so worded. So with an enthusiasm that concealed their fatigue, the staff faced its new task with a determination to make it work.

Legal and Financial Problems

The Illinois Legislature voted an enabling act, permitting the Commissioners of the South Park District to authorize a new contract for the holding of a new fair. This they promptly did in their customary spirit of cooperation. It was a moot question as to whether it was to be a continuation of the 1933 version, or an entirely new enterprise, until a Court decision determined it to be the latter. This was an important decision in favor of the Fair, as it permitted the elimination of some objectionable features, and the adjustment of others. Contracts for the 1933 Fair were terminated, and the negotiation of new contracts for 1934 begun. More liberal terms could be granted old exhibitors, as the buildings had been amortized, and they took quick advantage of the \$2.50 per square foot charge in comparison to the \$10.00 charge of the year before. The Exposition had kept definite records of the take of concessionaires, and was able to judge with accuracy the proper percentage for its share. This in general was far more favorable to the Fair than during the preceding year. Also its full share could be taken from the start, as concession structures and equipment were generally intact and already amortized.

The most serious problem arose in connection with the Gold Notes. The guarantees given in 1929 provided for the payment of interest and principal on a note issue, the proceeds of which were to be used for an Exposition to be held in 1933. The question then naturally presented itself—would the guarantees be valid for an Exposition held in 1934. Time was of the essence, and did not permit of the

lengthy proceedings required in an adjudication by the courts. In order to be released from a contingent liability, a number of guarantors had purchased notes to the extent of their guarantee, had these notes stamped "not guaranteed" and were released from further obligation. However, there were many notes outstanding held by original purchasers and contractors which were still fully guaranteed. The holders of notes released from guarantees were asked to subordinate their notes to permit the others to be paid in full before they received any further payments. Approximately 80% of the notes released from their guarantee and held by the guarantors were thus subordinated. This was a splendid act on their part, for they were the ones who had already done so much for the Fair. But their generosity and trust were finally rewarded and they were paid in full. Those who have done the most are generally the ones willing to do more.

Publicity for 1934

That there would be public interest in a repeat performance was undoubted, but in the final analysis this represented only a small percentage of the people necessary to make the second year a success. The millions who had not come the first year, those who lived far away, the vast throng who were at best apathetic and, most important of all, those who had been constant visitors in 1933 had to be motivated to act. A well planned campaign was instituted to sell the idea of a *new* Fair, and to overcome the feeling "It's the same old Fair, I saw it last year." And a new Fair it was, for radical changes, additions and eliminations were made all over the grounds.

It was realized that the publicity would be more difficult, as much of the news value of the Fair had been lost, and some antagonism had developed outside of Chicago among agencies who felt that the city had had its share and should let the tourist spend his money elsewhere in 1934.

Efforts were permitted to subside until mid-January so as not to wear out an already threadbare welcome. But from then on they were persistently and relentlessly pushed every day on a well-planned and orderly basis. Much had been learned the year before and advantage was taken of it. Special events were stressed. The policy of no-paid-advertising was continued. Stunts off of the Fair grounds, such as airplane flights, were discontinued.

Newspapers, magazines, broadcasters, and newsreels responded and the nationwide publicity actually exceeded that of the first year.

New Construction

Winterizing the Fair grounds proceeded apace, with structures and utilities buttoned down and covered to protect them from the rigors of a winter they had not been designed to withstand. When spring came, damage was found to be negligible, and all efforts were bent to making a new Fair for '34.

Over sixty acres of exhibits and concessions were moved to new locations. The Midway was lifted bodily from its position south of 23rd Street and moved to Northerly Island. The Army Camp was similarly moved. The south gate was

changed from 37th Street to the top of the hill at 35th Street providing parking.

The area around the shores of the Lagoon was cleared of such things as the submarine and the show boat, and of small structures, to give a better view of the water area which was to be featured. Over fifty major buildings and groups of buildings were demolished, many of which were eliminated, and others reconstructed elsewhere.

Roads and walks were resurfaced, the entire Fair repainted in lighter shades and the illumination greatly intensified by the addition of dramatic and fantastic lighting fixtures.

From end to end the Fair was refurbished so on the day of the second opening, it shone in its pristine glory—truly a new Fair. The Sky Ride underwent major construction changes, as the element of safety was involved, and there was a determination not to mar the first year's record of no serious injury to a single visitor. Wings of a Century had been a great success, and was enlarged and improved. The Mayan Temple, the Children's Playground, and all entrances underwent a face lifting. Two new outdoor theaters were constructed, one at the Hall of Science Court for Scientific Demonstrations, including a daily continuation of the Arcturus ceremony, and the Lagoon Stage, built in the lake before a grandstand seating 8,000 people for band concerts and circus performances. The Standard Oil Company's Live Animal Show at the south end of the grounds played to standing room only.

Many industrialists who had questioned the value of the first Fair, or who were openly dubious of its ability to transpire at all, came in eagerly for the second year. Principal among these was the Ford Motor Company which constructed an entirely new building at a cost of \$3,000,000. It contained so much that was novel and highly interesting that it would have well justified a trip to the Fair just to see it. Adjacent to the building was a beautiful garden through which visitors were taken for rides over "Roads of the World." Here was located the band shell where the Detroit Symphony Orchestra gave daily performances, to the delight of music-loving millions.

It is always difficult for management to get a true expression of opinion from the public. When the head waiter asks you whether you enjoyed your meal, you generally say "yes" whether you did or not, as it is distasteful to get into a needless argument. On the other hand, some slight irritation may call forth a tirade of abuse before there is a chance to cool off. Many efforts were made to obtain accurate and honest statements of what Fair-goers liked or didn't like. One of the most successful was by the Pullman Company which asked its conductors to inquire casually of travellers leaving Chicago if they had been to the Fair and what they liked. Since they did not suspect their answers would be relayed back, they spoke without restraint. The courtesy of the guides and attendants received the most favorable comments, and pay toilets the most unfavorable. The latter was an unwilling necessity of the first year, as money was not available to install them. But it was number one on the list of things to be corrected the second year, when all toilets were free.

Design and Construction Division

For the 1934 Exposition, the approval of the design and construction of buildings and all other installations of exhibitors and concessionaires was handled by the Permit Section. While the procedure was similar to that of 1933, experience had indicated some refinement and additions. It is given in detail here, not only for those who may have occasion to use it, but because it is believed the necessary complication of the procedure will be of interest to all.

Bulletins were issued and distributed giving all possible information on regulations, procedure, utility charges and other items of interest to anyone engaged in construction, installation and maintenance of exhibits and concessions. Contact men held all conferences with the exhibitors and concessionaires, directing and counseling them and making the necessary arrangements for their operations.

Before final approval was given on any project, the required drawings were routed to the following sections of the Exposition for comment as follows:

1. Contract Section

Verification of contract and space

Report on payments due on space

2. Co-ordinates

Building locations checked on master map, and on ground

3. Concessions or Exhibits Department

General approval of scheme

Interference with contract agreements with others

Duplication of type of exhibit or concession or excess, such as restaurant seating

4. Design Section

Approval of design of each structure, installation, furniture, awnings, ground layout, etc.

5. Signs

Throughout the pre-fair period and to the very end of the Fair, it was necessary to maintain and enforce rigid regulations on the size, number and character of signs allowed. Exhibitors, concessionaires and sign builders brought greater pressure to bear for the erection of unauthorized signs than for any other feature.

6. Color

Must comply with the general color scheme

7. Landscaping

For proper varieties and maintenance

8. Electrical

Electrical plans checked for compliance with rules and regulations

All other plans checked for interference with underground electrical ducts and cables

9. Other Utilities, Gas, Water, Sewerage

Checked on same basis as electrical

10. *Sound Equipment*

Restriction of use of sound equipment was as important as that on signs and caused nearly as much trouble

11. *Ventilation*

12. *Construction*

Examination by General Construction Department

13. *Approval of Contractor*

General responsibility

Insurance coverage

14. *Comptroller*

Approval of entrance turnstiles or other means of revenue control.

15. *Health*

Approval of plumbing

Facilities for handling and for the distribution of food

16. *Legal*

17. *Rules and Regulations and Building Code*

The examiner checked all plans for compliance with requirements on construction and submitted all individual buildings and special problems to the Building Commissioners of the South Park Board.

The Villages

The Belgian Village located on the high ground just south of 23rd Street had been one of the high lights of the 1933 Fair, both artistically and financially. It was a faithful reproduction of its counterpart in Europe. Molds had been made from the surfaces of actual buildings and cast in plaster here. With its colorful costumes and street scenes, the public loved it. Inspired by this success, 1934 suffered a plethora of villages. Individually they were well done and merited far better patronage than they received, but there were just so many of them that the fair-goers became surfeited. One can just eat so many of even the best of chocolates. Among the newcomers were the Swiss Village, Shanghai, Dutch Village, Hawaii, Italian Village, Tunisia, Spanish Village, Bowery, Merrie England, Black Forest, and Irish Village. They offered native food, folk dances, shops, exhibitions of native handicrafts, various entertainments. In spite of the competition, several made outstanding hits; the Black Forest with its professional ice-skating, Merrie England with its Shakesperian plays and the Colonial Village with its authentic settings and beautiful dances.

The Lagoons

During the day, the lagoon with its bright blue water, the panchromatic reflections of the buildings, and its gay passenger boats plying back and forth, was a thing of inspiring beauty. But at night it was a black hole separating the Island from the mainland. In 1934 this was changed, and the Lagoon became a sea of light. Brilliantly illuminated buildings were built in the center of the lake from the 16th Street bridge. The 23rd Street bridge was filled with interest-

ing shops, and the Swift Band Shell, featuring the Chicago Symphony Orchestra. A tremendous bank of searchlights flooded the sky over the lagoon from the 12th Street bridge, but topping it all was the magical effect of the Grand Fountain and its aurora of floodlights which filled the north lagoon. Brilliant flames played upon the skyward bound waters, submarine lights colored the moving pools with constant changes in colors and patterns. It was eye-filling and breath-taking in its beauty. Tired and foot-sore, the crowds stood entranced as the sixty-eight thousand gallons of water a minute rushed to their seventy-five foot height, golden, crimson, blue and purple—great shafts of dewy colored lights.

The Fair of '34 had the same measure of success as its predecessor. It had everything of value from the first year, with all the improvements and additions learned by that experience. The attendance fully justified the effort. Bonds and all obligations were paid in full. When the end came, all were thankful, but happy and satisfied. A precedent had been established, a chance taken, and a goal achieved.

DEMOLITION

Built with toil and sweat but with the raptures of creation, demolished with effort and pain, but with the knowledge of a worthy task well done, A Century of Progress, from a challenging reality, moved on into the realm of beautiful memories.

It is a happy thing to build. It is sad to destroy. But if demolition must come, it is better to make a clean sweep, to leave no dilapidated structures to mourn over their by-gone glory, no ruins which mean nothing but decay.

A Century of Progress had built a Fair. With its concessionaires and special exhibitors, it had covered four hundred and twenty four acres of lake front. It had built roads, planted trees, made gardens and laid blankets of greensward. Now all this had to go. And attention was turned to this phase of the Exposition with the same energy and punctiliousness as had marked the constructive days.

The Last Night

A remarkable phenomenon in mass psychology occurred on closing night of 1934. A half million people decided to do the same thing at the same time. They did this without premeditation, without leadership and with only the kind of intercommunication which prompts all pigeons in a flock to turn the same way simultaneously. They decided to take home a souvenir, a memento, a keepsake of the Fair they loved so much, and which in a few minutes would pass forever. So they literally began to take the Fair apart. It was done without malice, it was not done by hoodlums, it was perfectly understandable, but the devastation was unbelievable.

The closing night of the year before was a cold November 11th, and when, at twelve o'clock, the gates officially closed, there was hardly a soul on the ground. All had gone home leaving untouched the Fair which was to open again next spring. But it was different in 1934, the Fair really was over, and it was Halloween. Until eleven-thirty at night the enormous crowd packing the grounds had behaved just as they had on all the days preceding. Then as if by magic, over three and one half miles of Fair front, pandemonium broke loose. Everything that could be moved was taken; signs, some with letters six feet tall, light fixtures, benches, chairs, ornamental facades, curtains, anything which they could pick up, reach or climb to. Of the sixty-five huge pennants along the Avenue of Flags, not a shred remained. Guards at the gates made those leaving deposit all bulky objects on the ground, and nearly an acre was covered. "Great Birnam wood shall come to Dunsinane." Hundreds of small trees and shrubs were pulled up by the roots and carried as far as the gates where they were reluctantly left. There was literally a small forest around each exit the next morning.

The most interesting part of the whole proceeding was the fact that the destruction was done by well-meaning peaceful citizens who were simply caught in a mass hysteria and gave vent to a hitherto submerged destructive instinct. And, after all, who is to blame them for wanting to show a souvenir of their beloved Fair to their grandchildren many years later?

No better evidence of the fine *esprit de corps* of the staff of A Century of Progress was given than by the redcoated police on the last night of the Fair. At midnight their job was over forever; they had given a fine account of themselves during the operation and could be assured of top references; demolition of the buildings and grounds would start the next morning. Despite a full knowledge of all this, the entire force fought for hours to save the Fair from the vandalism of the closing night crowd. They could not bear to see wantonly destroyed that which they had guarded so carefully for two years. It was with a fierce protective instinct that they moved against overwhelming numbers. Nearly every man on the force required first aid treatment at the hospital before the break of dawn.

Removal of Exhibits and Concessions

All guides, guards, police, and cashiers in good standing were given their uniforms with their last pay check. Likewise, all costumes worn by actors in The Wings of A Century were presented to them. Basic Science Exhibits, films, and lantern slides used for advertising purposes and other property of this nature were donated to museums or other public institutions upon request. Some items were claimed by the South Park Commissioners under the terms of their basic contract.

Before the Fair closed its gates on that October evening in 1934, plans were already under way for clearing the buildings of exhibits, for the razing of structures and the restoration of the grounds to their original condition. There was a bit of grim humor in this last provision, for it would not have been possible to restore the grounds to the state in which the Fair found them, unless cart loads

of rubbish had been hauled in, old shacks erected along the water front and many valuable utilities torn up.

The ordinances which authorized the use of South Park land for the purposes of the Exposition provided that at the close of the Exposition A Century of Progress should remove all structures not specifically taken over by the Park Commissioners and should restore the site to approximately its erstwhile condition. Under the contracts with the Exposition, concessionaires and exhibitors who had erected structures, were obliged to remove them, and bonds had been furnished to insure this action. Also, it was obligatory upon them to remove all their exhibits and equipment. By the close of 1934 most of the exhibitors and concessionaires had completed this work, and the South Park had designated the buildings which it wished to retain. The Fair could now begin its task of demolition.

As early as August, 1934, an order was issued by the General Manager creating a Demolition Division to take care of the post-Fair activities. The work of this division fell naturally into five sections: Industrial Exhibits, Concessions, World's Fair Concessions, Governmental and Scientific Exhibits and Works.

On September 15, notices were sent out to all exhibitors and concessionaires giving full information relative to demolition requirements and procedure. Application forms for removal of exhibits and concessions accompanied the notices and all were urged to make their applications early. Upon receipt of the signed applications they were sent to the offices from which their clearances were necessary—exhibits or concessions, customs, comptroller and legal. Adjustment of these bills and other matters were included in the final settlements. Permits were cleared by the offices affected and sent to the Works Section for check and signature and then to the Area Office of issuance. Arrangements were made with some exhibitors and concessionaires to permit leaving structural parts in place upon payment of the estimated cost of demolition.

This work proceeded so rapidly and smoothly that nearly all removal permits were issued within two days following the close of the Exposition. The Area Offices were busy for about ten days, as they had to issue sub-removal permits for all loads of material leaving through the Exposition gates.

Inspections were made of the exhibit and concession spaces as they were rapidly emptied and final clearance sheets were prepared and furnished to the exhibitors and concessionaires and to the Exposition contractual records office. The demolition of structures belonging to exhibitors or concessionaires did not move so rapidly, for a curious and interesting reason. The contracts of these groups in general provided for complete demolition before February 1, 1935. However, many were reluctant to proceed with their demolition as there was considerable agitation about holding some kind of an Exposition or amusement center on the grounds in 1935. If this were to transpire, they felt, naturally, that their structures might be of some value.

The Chicago Park District, which had sixty days following the close of the Exposition to decide what Exposition structures it wished to retain, reached a

decision the latter part of December to retain only a few structures, useful for park purposes. However, a committee was appointed to consider plans for future possible expositions and so the owners of special structures were still more loath to begin demolition. Since the Exposition itself was not required to have the structures removed until July 1, 1935, extensions of time were given to those who seemed to have good reasons for such requests.

The demolition of the concessions owned and operated by A Century of Progress proceeded apace. On November 7, 1934, the Lama Temple was boarded up, the inside watch service withdrawn, and keys sent to the Archaeological Trust which was to inherit it. The Enchanted Island was soon a thing of the past. Equipment and props from The Wings of A Century were disposed of with equal rapidity. Fort Dearborn was to remain on the grounds.

Disposal of Exhibit Material

Other work of the Demolition Section included the return of all governmental and scientific exhibits, and the return of property which had been loaned to the Exposition. By November 15, practically all governments and states had completed removal, except for those exhibits containing goods received under A Century of Progress Customs Bond. In these cases, the necessity for making inventories delayed the final customs clearance. Although the majority of exhibits loaned to A Century of Progress were housed in the Hall of Science there were others in the Hall of Social Science, the Maya Temple, the Travel and Transport Building, Wings of A Century, Fort Dearborn and Enchanted Island. Experience indicated that parts of scientific exhibits were considered most desirable souvenirs so extra precautions were taken for the safety of these exhibits. In one case, some prehistoric figurines belonging to the Oriental Institute of the University of Chicago on exhibit in the Hall of Social Science, and most valuable and irreplaceable, were returned to their owner on the day before the close of the Exposition. These precautions resulted in practically no loss or damage within the buildings on closing night.

As donor of the greatest number of exhibits, and as legatee of the science exhibits belonging to A Century of Progress, the Chicago Museum of Science and Industry was furnished space in the north wing of the second floor of the Hall of Science as a receiving and clearing room for its exhibits. The Museum was also furnished space in the Travel and Transport Building to take care of exhibits coming to it from the southern part of the grounds. Many of these exhibits are now in operation at that institution.

Experience in returning borrowed material emphasized the desirability of having an effective system of keeping track of each item from the moment of its arrival until it is again in the hands of the lender. It should be established in its entirety before anything is borrowed. At the close of the Fair there were over 4000 items of borrowed material on hand, valued at approximately \$375,000.00.

General specifications and conditions for a contract for removal of all Exposition owned structures were prepared promptly at the Exposition's close, but bids

were not invited until the Park District had reached a decision as to which structures it wished to retain. Bids were opened on January 25, 1935, and the contract awarded to the Barker, Goldman, Lubin Company of Springfield, Ill. It provided that the contractor would remove all Exposition structures listed in the specifications, that foundations were to be removed to a depth of four feet below ground level and that all materials were to become the property of the contractor. It was provided that the contract be completed before October 1, 1935 and that the contractor pay to the Exposition the sum of \$28,000.00.

Sale of Miscellaneous Property

While the material of which the buildings were fabricated became the property of the contractor, the Fair had a vast number of miscellaneous items which were to be liquidated. In order to save time and money, this material was mostly sold in large lots and many were doomed to disappointment when they learned that retail sales of some particular items would not be made. A Salvage Sales Section was set up to prepare inventories of all exposition property to be sold, to reply to the many people soliciting gifts or wishing to make purchases, to establish mailing lists and to prepare schedules, by lots, of property for sale. It was decided that the property of the Exposition would be sold by soliciting sealed bids for lots, made up so as best to meet the need of the prospective buyers. Locations were established for salvage sales displays, arrangements were made for the reception of prospective purchasers, and systems were developed for the checking of all lots as they were released to buyers.

The sales were in general for cash to the highest bidder by sealed proposal. Successful bidders were required to comply with the conditions and terms of sale which required among other things that the property bought be accepted "as is, where is, and if is." Every attempt was made to give true and fair information but bidders were warned to inspect the property and base their bids on their personal observations. Displays of salvage items were set up at various points in the Exposition ground. The requirements for marking bids, for opening, filing, and recording them and for care and disposition of deposits followed United States Government methods in general.

Certain articles, such as folding chairs, benches, mushroom lamps and waste paper containers did not lend themselves well to sealed bid procedure as many prospective buyers wanted only one or two of each. For such articles standard prices were fixed, samples were placed on display and buyers were permitted to purchase on the cash and carry plan.

The variety of articles finally assembled was both amazing and amusing. From bicycles to vases, from quantities of calcium chloride to playground equipment, from drying ovens to search lights,—all the multitudinous and varied equipment used in so stupendous an undertaking as the Exposition was sold. There were boots and books, galvanometers and gardener's tools, lockers and lime, phonographs and padlocks, raincoats and rheostats, ticket boxes and trucks, valves and Wings of A Century props to say nothing of office equipment, floor coverings, tools, and electrical equipment. The total receipts from these were approximately

\$80,000. This work was carried out with dispatch, efficiency and profits to the Exposition due to the close supervision which Commander (later Admiral) Nuber gave to the task.

Removal of Sky Ride Towers

The most dramatic incident in connection with demolition was the removal of the Sky-Ride towers. As long as they stood, straight and unyielding above the wrecks of buildings, observers could still see something of the Fair. It was not until the first of these towers came crashing to the ground, that the public finally realized that the visible exposition was gone. "The razing of the west tower," wrote a Chicago reporter, "was an achievement of engineering calculation. The 628-foot-high lattice work of steel fell at the ordained time, in the determined direction, within a foot of the stakes set out for its striking area."

"The reverberating report of 120 pounds of dynamite blasting apart the connections of the two main cables with the anchorage to the west of the tower at 5:55 A.M. gave notice that the instant had come to crash the tower. Simultaneously with the detonation the doomed structure tilted towards the east; the rigid steel cables between the towers flexed. For a bit of time it seemed as if the graceful structure would topple over as an entire tower. Then came a shrieking, screaming chorus of rending steel; the tower parted just above the 200 foot level where the rocket cars once parked for passengers on the aerial railway. The reacting cables jerked the upper 400 feet of tower eastward, and then, almost instantly, two thunderous crashes roared the end of the Sky-Ride."

Due to its proximity to the Outer Drive, great secrecy was enforced as to the time of the demolition. All news and photo agencies were notified well in advance and were on hand, but the public was conspicuous by its absence. This was well, for it was inevitable that large pieces of steel would be blown great distances. However, the public was disappointed, so it was arranged to make the felling of the East tower a spectacle. Thermit, to burn through the structural members, was to be used instead of dynamite. On a warm afternoon in the presence of the last great gathering in the Lagoon Theatre, the tower slowly crumpled and dropped to the north. *Sic transit gloria mundi.*

Finale

In the Administration Building offices, a skeleton staff was busy clearing up the record section, handling passes, receiving, distributing and sending mail, handling telephone and telegraph services, operating the restaurant, and maintaining the building, and supervising scavenger and rubbish service. The executive office was in the last throes of demolition, legal matters, finances, insurance, and the thousand and one other details which had to be put into the limbo of completed things before the affairs of A Century of Progress could be finally closed. The Administration Building was closed on February 28, 1935, and the offices for final dissolution moved to 640 Michigan Ave.

The demolition of the buildings sped along at a rapid pace and was finished in February 1936, a little more than a year after the bid was accepted. The demoli-

tion contract did not provide for the removal of underground utilities such as water and sewer pipes, nor did it include tearing out roads and walks constructed by the Fair, the replacement or repair of original roadways and the re-sodding of large areas, though these and many other items were included in the Exposition's obligation to the Chicago Park District to restore the grounds to the condition in which they were received by the Fair. In carrying out its trust as a municipal body, the Park District would have demanded that this be done with extreme thoroughness. However, the Park District had under consideration plans for many changes in that portion of the Park area occupied by the Fair, especially in the layout of the highways and the landscaping. It would have been most uneconomic to restore large areas only to have the Park tear them up in a few months to provide for their contemplated new development. It was proposed to Mr. Robert J. Dunham, President of the Park Board, that the Exposition pay a sum of money equal to the costs of restoration, and be relieved of its obligation for other than demolition and removal of structures. By Ordinance passed by the Chicago Park District on July 2, 1935, this proposal was accepted, and payment was made in the sum of \$275,000. It left the Park Commissioners free to carry out their plans, in accordance with present needs, and A Century of Progress was relieved of what, under the terms of the agreement, would have been a heavy burden, requiring an expensive field force for another year.

The ultimate result of this Ordinance, and the completion of the work of demolition under contract was that on February 25, 1936, the Park District accepted the entire area used by A Century of Progress and directed the return of the collateral remaining in its hands.

At this writing the only trace of A Century of Progress is the column presented by the Italian Government to commemorate Balbo's epic flight. The Lama temple was removed to the New York Fair of 1939. Fort Dearborn partially burned and the remains were demolished. The Administration Building served the needs of the Park District until their own fine new headquarters was built, then it was torn down.

At the planning stages of all fairs, there is the moot question of permanent versus temporary buildings. At A Century of Progress the decision was firmly against any structures remaining after the close. A library, an auditorium, or public building is usually the bait to entice public money and the sop for contributions from taxpaying bodies. As fine as they may be, they are usually at the expense of the beauty and unity of the architectural composition. A fair is a carnival, a Mardi Gras, a fantasia, marvelous for a short time, but not to live with indefinitely. Even the architects are quite willing that their most brilliant creations pass with the setting for which they were designed. Permanent buildings place the designers on the horns of the dilemma, either to pull their punches on the temporary buildings so they harmonize with the others or else to accept an incongruous mixture. And of all errors perhaps the worst is to permit a semi-permanent structure to remain in a state of gradual dissolution becoming a hazard and an eye-sore to all.

A GUIDE FOR FUTURE FAIRS

Each fair is unique with problems peculiarly its own, and decisions must be based on a determination and evaluation of each factor affecting the particular fair under consideration. That which was an outstanding success in one location might be a failure elsewhere and that which failed might succeed in another place. Geographic layout, climate, economic conditions of the times, competition, cultural background, and industrial potentialities of the locality may differ radically at different places and, after a substantial time interval, at the same place. The advice of out-of-town experts should be considered seriously, but accepted with discretion, for while their suggestions might be sound under the set of conditions with which they are acquainted, they might not be applicable when all the other factors of a particular situation must be considered.

The term "fair," as it is used in this chapter, is generic. While the discussion is mainly applicable to major expositions and worlds fairs, much that is covered will apply to State and County fairs, permanent exhibitions, trade shows, industrial or science museums, historic shrines, and corporation exhibits on their own premises.

A fair must first of all provide high entertainment value. In addition, however, it should have spiritual, patriotic, technical, cultural and educational values, so that the visitor may leave with a sense of reward and of personal benefit or uplift. It should have a theme and philosophy and a reason for being, such as an anniversary. Otherwise, it will be merely another amusement park. Salient reasons for a fair are to enhance the reputation of the locality in which it is held, to provide entertainment and education to the local community, to bring visitors with

fresh capital who would not otherwise come, and to display products, processes, and handicrafts.

If the fair is not of a magnitude or quality to attract widespread attention, it will not bring new money into the area and will not merit the continued support of those whose local business interests are affected. Though it will be a local success, it will merely recirculate money already in the community.

The things that do not happen at a fair may be as essential to its success as those that do happen. The fair that can operate without fires, structural failures, serious accidents, hold-ups, counterfeiting of tickets, speculation among employees, and scandal, is fortunate indeed.

Much that is covered in this chapter seems obvious and enumerates merely the practices normally followed by sound businessmen. Strangely enough, show business seems to distort the thinking of ordinarily conservative people. The most serious failures in fairs of the past have been occasioned by a refusal to follow the same principles that would have been adhered to in other fields. Despite its glamor, excitement, and hurley-burley, a fair is a straight business proposition, the precepts of which cannot be brushed aside because of its ephemeral nature or because of civic pride, of shortness of time, of pressure of influential outside interests, or of a feeling that show business has different standards.

Over-enthusiasm, or an unwarranted optimism on the part of the Board of Governors or the management, which results in exaggerated predictions of attendance and income and authorizes excessive expenditures prior to the opening, has been disastrous to many fairs. Adherence to basic economic principles is the surest means to a successful financial outcome.

Seasoned executives provide better management than even experienced showmen. However, most successful businessmen are accustomed to heading organizations of trained employees who after long years of experience have risen through the ranks, where routines are so well established that most important areas of operations function automatically, and where there is the stabilizing influence of tradition. They will find an utterly different situation when they assume the management of a fair. The first efforts are by inexperienced people groping for answers to unknown problems. When the plans are completed, there is the feverish activity to finish the fair on time, with hundreds of different activities to be so coordinated that they all reach a given point at the same time. On opening day this part of the work is finished. Then new and untried personnel, such as guides and cashiers, with but a few days of previous training, are brought in, and the older employees are transferred to the new jobs incident to operation. Here an entirely new phase of learning begins, for dealing with the public in masses presents a problem peculiarly its own. Finally there comes demolition and the disbanding of the organization. Each of these phases presents situations so different from the normal operation of an executive in a going concern that he must continually adjust his thinking to conditions at variance with his previous experience. This will require imagination, realistic judgments, versatility, wide experi-

ence, inexhaustible patience, and a complete disregard of clock-hours, if he is to meet successfully his challenge.

The enthusiasm and loyalty of the staff is one of the most important assets of a fair. Those who have rendered this type of service during the construction period should be utilized to the fullest during the operating period, for their knowledge and experience and the confidence top management has in their ability are prime requisites in the hectic days when the public swarm the grounds. An architect may be put in charge of concessions, a lawyer in charge of special events, and a construction superintendent in charge of the Midway. As far afield as these new duties may be from their previous experience, they are better able to pick up these new assignments than others brought in from the outside. It has been amply demonstrated that most men who are capable of outstanding performance in one job will render comparable service in another, no matter how diverse.

Management

The fair management should be free of any direct interference from individual members of the Board or the Commission. While there should always be intimate and free contact among them, a sharing of problems and the seeking of advice, management should not be forced to accept directives which may be the personal opinion of one member only. Likewise, the management should firmly resist the dictation of pressure groups, officials, and individuals not members of the Board. Directives which control the decisions of management should come only by official action of the Board of Governors or their authorized representative.

Management should not ask or accept personal favors from politicians, concessionaires, contractors or others, for they may exact exorbitant returns at the expense of the fair, which management is paid to protect. Even personal safety may be involved if subsequent demands are refused. They will respect integrity and are not likely to make improper requests for themselves if they are convinced that none of their competitors is receiving special concessions or privileges. An assurance of honest administration is the best guarantee of cooperation. Similarly, management should have no traffic with those whose motives are to exploit rather than to help. If management does not indulge in politics, it is able to resist political pressure.

Well-meaning and influential individuals or groups may urge plans or ideas that do not fit into the scheme or the financial ability of the fair. It requires considerable tact to hold their interest and friendship while denying their requests. The results of acquiescence through a desire to please can be just as disastrous to the fair as those inspired by less pure motives. This is particularly difficult with requests to make charitable solicitations on the grounds or to permit the establishment of booths for the promotion of responsible non-profit agencies working in the public service. Unless they have a definite bearing on the welfare of the exposition, these requests should be denied, for if one group is granted these privileges, the pressure from others may become insistent and so many admitted to the grounds as to become a nuisance to visitors.

All staff members should be directed to report immediately to management any offer of bribe, tip, or present no matter how inconsequential. Since many concerns consider such presents merely a legitimate method of showing appreciation for business, the first offer should be returned politely with the caution that no further business would be tendered that company if such offers should be repeated.

Some contractors have submerged in their bids for work a sum to be given inspectors, purchasing agents, receiving agents or higher-ups. Obviously, this comes ultimately out of the fair's treasury. When such bidders become finally convinced that no such handouts are expected of them, their bids may drop accordingly. All staff members should be fully conversant with this policy and the reasons for it, and any offenders dismissed immediately upon verification of the facts.

There are courtesy presents which are given out of sheer friendship with no intent to influence decisions or to seek favorable considerations. It is equally important that such gifts be reported to the management for a decision on their propriety.

Loyalty and the respect of subordinates can be neither ordered nor purchased. It must be won by the actions of those higher up. It is essential that top management be scrupulous in avoiding any practice which inures to their own benefit at the expense of the fair, or even the appearance of it for the entire staff is simply the lengthened shadow of those at the top, and any laxness will quickly permeate the whole organization.

All positions on the staff should be given on the basis of fitness only. Nothing is more destructive to morale than a general feeling that opportunity and promotion will go to those with pull, or that those with connections will not be required to pull their fair share of the load. The maximum services of staff members cannot be purchased by salary alone. They must have engendered in them a burning enthusiasm to make the fair a success. It must be a game with a championship at stake.

Management must not vacillate on decisions. Time is of the essence, and even a simple plan driven through with determination has a better chance of success than one of meticulous detail constantly changed as each new idea suggests itself. Likewise, there should not be divided authority for important decisions, lest a refusal given by one executive prompt the applicant to seek an affirmative response from another. Precious time is saved and respect engendered when it is realized that decisions will not be reversed by going in the back door.

Financial Policies

All major American expositions, with the exception of A Century of Progress have ended with a substantial deficit, taking the edge from an otherwise successful operation. Most local fairs have required an annual subsidy from a tax-collecting body. It is believed that with correct fiscal policies and a strong management that will adhere to them, most fairs should be able to pay for themselves.

Do not spend for construction and operation more than a conservative estimate of probable income, allowing an ample margin of safety for unforeseen contingen-

cies. Make no commitments until there is cash on hand to pay for them. Quality, intriguing appeal, and specific interest are far more important than size. Accounting should be cleared daily during the operating period to be certain that the daily "nut," or operating expense, is well within the daily income.

Keep prices low and uniform. Changing of admission prices for special occasions or at various times of the day should be considered with caution, as it is confusing to many and irritates those who must pay the full price. It frequently advertises the desperate need for more customers as a successful show does not cut prices. The largest net returns will come from large capacity and a small charge. Limit passes to officials and those with business on the grounds. Passes issued promiscuously not only entail a loss of income but discourage paying customers and engender disrespect.

The bulk of attendance and hence financial returns comes from the low income family group, so each activity should be designed for the general public. Many fairs have made the mistake of catering attractions and restaurants to an upper bracket group who are of the cultural and financial status of top management. This group adds little to the financial success of a fair, for they represent but a small percentage of the total attendance, and frequently expect special privileges. However, distinguished groups and celebrities add prestige to the fair, are impressive to the general public and heighten the morale of the staff. Their attendance should be sought and their presence heralded.

Eternal vigilance, even in the smallest matters, is the price of successful operation. Sound business thinking and realistic arithmetic should be applied to all untried schemes promising large profits. Be prepared for unforeseen expenses just before opening, for last-minute rushes involving overtime may reach almost unbelievable proportions. Complete each project as far in advance as possible and do not begin new ones unless they can be completed before opening day. It is of paramount importance that the fair be completely finished when the gates open. Otherwise, the early visitors will advise others, "Wait until later in the season when everything is finished."

Favorable word-of-mouth publicity is the most productive advertisement and it increases in geometric proportion through the season. Hence, it is vital that the first-comers receive a good impression.

Revise the budget as frequently as necessity demands, but keep all expenditures rigidly within the last budget established.

Keep the operating staff at a minimum; a few good people are worth a dozen mediocre ones. As the staff grows, expense pyramids out of proportion. Use the services of existing agencies wherever possible. This includes such services as auditors, architects, exhibit builders, refuse collectors, travel agencies and many others.

There is an optimum amount that may be spent for decorative features such as sculpture and landscaping, and more will not produce commensurate results. Excessive areas of gardens and landscaping around exposition buildings separate

them so widely as to make access difficult and cause unnecessarily long walks during days of rain or extremely hot weather.

When subsidies are received from governmental agencies, the expenditure of which is controlled by commissioners other than the fair management, and are merged with other funds received from private interests such as subscriptions to bonds or the sale of exhibit space, there must be a clear understanding between the two parties. Since, frequently, the funds from these two sources cannot be distinguished in general expenditures, there may be a tendency on the part of the governmental commissioners to dictate not only how their part should be spent, but all other funds of the exposition.

To assure the success of a fair, there must be more than ample money and competent management. It must have the enthusiastic and effective support of public officials, trade associations, business interests and the press. The conditions under which management operates may be determinative. Basic contracts and agreements, such as the lease for the property occupied and the trust indentures for the bond issue, enabling acts, and civic ordinances must be broad and equitable. Once they are set the fair management will have no further control over them, and if they have undesirable features or provisions the fair may be in continuous jeopardy.

The financial success of the fair will depend on realistic planning, scrupulous economy, productive attractions, a single authority controlling expenditures and a strong and unhampered management willing to sacrifice personal convenience and forego other obligations during the period of the fair.

Protection

The function of a legal department is to prevent rather than to win lawsuits. The normal procedures of legal action are so lengthy that decisions may not be reached until long after the fair is over. A pending case, particularly an injunction, may restrict essential operations during the period in which the fair is open. Legitimate claims should be settled out-of-court promptly and equitably. Other claims should be fought to the bitter end. When this practice becomes known as an established policy, it will discourage racket suits.

Fire and accident prevention are first essentials. Every precaution should be taken against fire, for while adequate insurance is mandatory, claims may not be received until after the exposition is over. Even if paid immediately after the fire, there will be no time during the operation of the exposition to reconstruct a destroyed major structure, and its charred ruins on the grounds will be an eye-sore and detract from the carnival spirit of the crowd. Public liability insurance will protect the fair against personal damage suits, but the fair must exercise vigilance in all of its construction and operation to prevent injury to visitors. The grounds must be so well protected that small children and unaccompanied women will feel safe at all times. Sanitary and health regulations must be rigidly enforced.

Ground Operation

The grounds should be kept scrupulously clean at all times, for whatever added initial expense is involved is an eventual economy. The public tends to respect that which is beautiful and orderly while having no hesitancy in contributing to litter or defacement of structures. Cleanliness and orderliness are more effective in controlling the actions of a mass of people than are signs, fences, or police.

The police, guides, and demonstrators are actually the hosts of the fair rather than top management, for these are normally the only ones with whom the public has intimate contact. They should be selected for their courteous manners and trained to serve the public politely and kindly at all times. They can be one of the fair's greatest assets. No discourtesy to the public from staff members should be tolerated.

All regulations should be for the benefit of the public rather than for the convenience of the staff. The reasons for certain rules to which the public may object, but which are necessary for their general convenience, should be made known to members of the staff so that adequate explanations may be given to complainants. If an order, directive, or regulation cannot be complied with or enforced, it had better be left unissued. It is a sound policy not to make rules or issue orders unless management itself is willing to obey them, willing to check that they are obeyed, and willing to take disciplinary measures if they are not.

There should be ample toilet facilities, adequate shelter in case of rain, and extensive parking facilities with ease of access.

The volume of loudspeakers should be adjusted to confine the sound to the area of an exhibit or concession. No garish or blatant advertising signs should be permitted, and there should be rigid specifications as to their allowable size and character. Any deviation from these is an invitation to further encroachments on good taste and a demand from competitors for similar or greater concessions, and soon the situation will be out of hand.

No vehicles except those for emergency service should be permitted on the main thoroughfares during the period the fair is open to the public. Fair visitors are not alert to traffic dangers, as they would be on a public street, and they resent special privileges not accorded them. The intramural transportation should, if possible, be located off of the main pedestrian arteries.

Publicity

While favorable word-of-mouth publicity is perhaps the most valuable, all media of mass communication must be utilized to the fullest. Local newspapers, radio stations, and trade publications may be counted upon to give enthusiastic support. To achieve nation-wide newspaper coverage, network broadcasting, or the national magazines, the fair must make news of an unusual or spectacular nature. There is no more important function of the publicity office than to dig in every nook and corner of the fair for news, for even loyal local news publications cannot be expected to bore their readers with "puffs" not backed by substantial facts.

It is dangerous to use any paid advertising, since no fair has the financial resources to cover all desirable media and those who are left out may feel no urge to print even newsworthy items.

Full courtesies of the grounds should be extended to reporters and adequate facilities provided for cameramen. The latter frequently work under difficult conditions, and in their desire to get good camera angles may disrupt performances or annoy distinguished guests. If proper provisions are made in advance, most of these difficulties can be obviated, and the fair will receive the benefit of good picture coverage.

Releases should be confined to facts, so that confidence may be engendered in news offices and in the public. Exuberant press-agentry, fantastic promises of wonders that never materialize, exaggerated claims and lavish superlatives engender a lack of faith in promises of things which actually transpire and a let-down feeling by visitors who do not find what they had been led to expect. Benjamin Franklin wisely said, "A mild statement carries the greatest conviction."

Predictions should be on the conservative side. When a reporter asks for a quote on probable attendance for the next day and management reasonably expects 100,000, it is better to say 75,000. Then if the actual attendance is 85,000 the next day's news item says "crowds exceed fair's expectations". But if 100,000 had been forecast and only 85,000 came, the same item says "fair management disappointed in low attendance". The psychological effect of these two statements on the public is obvious.

Concessions

Concessions, including food, drinks, souvenirs, rides, shows, spectacles, and transportation, present some of the most important problems for which the fair management must find satisfactory solutions. They produce the bulk of the operating income, they attract large numbers of care-free visitors, but they are the source of many headaches. The financial responsibility of all concessionaires should be carefully checked by management, as previously successful operators may be forced to seek outside financial aid under disadvantageous conditions. They frequently extend their construction costs beyond their resources and are in financial difficulty before the gates open. This is aggravated by the fact that the early days of an exposition are generally ones of low attendance, and concessionaires may have further difficulty in meeting their daily operating expenses. The history of fairs is replete with the closing of concessions due to lack of funds after the first month of operation. This presents a serious problem to management, as vacant stalls on the Midway have a depressing effect on the crowd and refinancing may entail further losses. The bulk of fair attendance comes during the vacation period, between the Fourth of July and Labor Day, and there must be sufficient resources to tide concessions over until the big money period.

It is wise to give as many concessions as possible to long-established firms rather than those newly organized, frequently with unseen backers, for the pur-

pose of the fair. The former have reputations to maintain after the fair and are less likely to make a quick dollar at the expense of the public. This is particularly true of concessions for food and drink. Fewer shops will close if concessions are given to experienced and reputable operators in preference to amateurs or promoters.

All concessions should be under the sole jurisdiction of the management, as it is essential that uniform rules and regulations apply to all. All contracts with concessionaires should contain a clause whereby management can take summary action against offenders for violating rules of the fair, or of good taste, or for cheating the public in the so-called "games of skill". The concession should be immediately closed and the operator excluded from the grounds if the violation is sufficiently serious. Right to take such drastic steps should be provided in the contract, as there is no time during a fair for injunctions and court action. It is the responsibility of the management to take whatever action is best for the reputation of the fair and the convenience of its visitors and not to be inspired by the profit motive alone. Many things that would be profitable must be foregone and others, such as raincoats and film, must be provided even if at a loss.

Since the income from concessions is so important a factor in the fair's financial outcome, the fair must exercise every opportunity to keep concessionaires happy and prosperous. The contracts should be just and equitable and may even provide that the fair does not take its percentage during the early days of operation, making it up by a higher percentage during the more prosperous days to come. Full cooperation and an understanding of a concessionaire's difficulties will be mutually profitable. On the other hand, management must be careful not to let itself be pressured out of legitimate returns.

The fair management must guard against competing with itself. The audience may be divided, but the operating costs are not. Attractions should be grouped around the largest money maker to assure a large group of people in the immediate area just before show time. This may be further facilitated by timing the exit from minor shows to just before the beginning of the major one.

Certain limitations on sales should be considered, though these will vary under different conditions. They may include: no hawking through the grounds; no selling except from established booths; no sale of programs or soft drinks during a show; and no selling of products other than for the convenience of visitors. Restaurants present many problems, such as number of locations, number of seats in each, and the quality and price of food. Due to the high cost of installation, the difficulty of servicing, and the short period of operation, amortizing the original investment without excessive food charges presents a dilemma. This may be partially offset by a subsidy for the exclusive use of certain beverages. The good impression made on a visitor by a splendid overall fair can be dissipated by poor quality food or a ten-cent overcharge.

While new and unique attractions should be cultivated, the fair must not look askance at proven attractions,—in other words, "corn". This word has assumed a derogatory connotation, but actually it means that which the mass of people

have known and loved over the years. It is down to the grass roots; it is time-proven, or else it would not be "corny". But the oldest of these is new to each succeeding generation, and human nature does not change.

Exhibition Techniques

A variety of basic exhibition techniques exists from which the exhibit designer can select those which best serve his purpose. In developing an exhibition area, a combination of a number of basic techniques, as expressed in individual exhibits, is usually indicated to give variety and to serve various purposes and to appeal to the many levels and tastes of visitors. No one technique is superior in all instances. Each should be used only when its particular characteristics will contribute to the solution of the problem at hand or to the general effectiveness of the exhibit area.

The following is a check list of exhibit techniques:

Diorama	Acturama
Life size model	Replica
Scale model	Full size reconstruction
Full size standard equipment	Case display
Heroic size model	Cast of object
Habitat group	Process installation
Photograph	Slide projection—Balopticon—
Translite	Admatic
Phantom photograph	Strip film
Stand-up theatre presentation	Theater presentation
Wall display	Comic strip technique
Poster technique	Topographic model
Historical object	Turn table case display
Mural	Laboratory experiment set-up
Three-dimensional mural	Transparent mirror case display
Microscopic slides	Charts, diagrams, drawings
Photo-micrograph	Flow chart
Micro-projection	Guessing game
Motion picture	Scene-in-action
Three-dimensional motion picture	Sectionalized mechanism
Three-dimensional projected photo	Operating models and equipment
Stereoscopic photograph	Question and answer board

The foregoing basic techniques can be combined within an individual exhibit to produce an infinite variety of combinations as called for by the particular factors present in any exhibition problem.

Exhibits based on many of the foregoing techniques may be either static or operating. If operating, they may be in continuous operation, demonstrator operated, or visitor operated. If visitor or demonstrator operated, they may be power driven, or manually driven. If power driven, they may be controlled by means of

push buttons, throw switches, time switches, foot-operated switches, photo-electric cell controls, capacitance effects, body temperature effects, etc. If manually driven, they may be operated by means of hand cranks, foot pedals, levers, endless belts. Automatic counters give concrete evidence of the extent of visitor use and interest.

Exhibits based on many of the foregoing techniques or combinations thereof, operating or static, may in addition be combined with an oral presentation. Such an oral presentation may be made by a demonstrator or an amplifying device, using a disc record, a wire or tape recording, or a sound track on film. Such devices may also be synchronized with special lighting effects, operational controls, or action within the exhibit.

Labels or descriptive legends may be printed, hand-lettered, cast in bronze or plaster, etched in glass or plastic, engraved in plaster, wood, metal or plastic. Cut out letters from a variety of materials may be applied to any surface or placed on a light shelf in silhouette.

In order to focus attention on particularly important parts of any exhibit, many techniques are available including the use of color, special lighting, arrows, cords, ribbons, numbers, and signs to direct the viewer's attention.

The foregoing refers in general to the individual exhibit. In most cases, however, a number of individual exhibits are combined to produce an exhibition area. In designing such an area, three matters which relate directly to exhibition techniques are involved: architectural design, lighting and color.

Proper architectural setting is essential to give an exhibit importance, but it should be subordinate to the exhibit itself. While each exhibit group should have an architectural entity, it should be different in design from adjoining groups, giving a change of pace and delineating the area. Traffic layout is of extreme importance, and ample space should be provided in front of important exhibits for demonstration to groups.

In general, the public will not stand more than a few minutes, nor sit more than ten minutes, unless there is a demonstration or attraction of high interest to hold their attention.

Architectural design, like art in any form, is largely subjective. There are, nevertheless, many matters of taste, general appearance, and appropriateness, which are commonly agreed upon. In this phase of exhibit development the services of a professional designer or architect are essential. In addition to purely esthetic matters, the exhibit designer's function is to produce educational or sales effectiveness. Mediocre material well presented is more effective than superb material poorly presented.

The designer's problem is to produce an architectural design which will accomplish the exhibitor's purpose. This involves the arrangement, shape and size of the individual components which comprise the exhibition area; the contour, placement, and appearance of walls and partitions; the selection and design of floor coverings; the design of ceilings, lighting troughs, domes, wells, bays, alcoves, railings, cases, signs, labels; and all other physical features of the exhibition area. Tie-in or contrast with surrounding exhibits is a factor to be considered.

The lighting of an exhibition area is of paramount importance to its effectiveness. In general, the best practice is to subdue general room illumination and to apply the light in generous quantities to specific points. This focuses the attention of the visitor and provides intriguing drama. Sequential lighting may be used to carry the visitor's attention from one point to the next.

Color in an exhibit area is useful in providing a generally pleasant atmosphere inducing the visitor to remain in the area. Color is also useful in defining a given exhibit space. When a distinctive color scheme is used the visitor knows that as long as he is within the confines of that color scheme, he is dealing with a given subject.

Cost is not a good criterion of effectiveness, as many an inexpensive exhibit has attracted continuous crowds, while an adjacent one costing many times as much has been passed by unnoticed. Likewise, quality rather than size is the measure of a good exhibit.

Presenting a story. The effective exhibit does not deal with unrelated, isolated objects. It tells the story in a logical sequential way. Virtually anyone will find interest in such a well-told story whether it is on a subject with which he would normally be concerned or not. If the subject is technical, scientific or industrial, the sequence should begin with the least fundamentals, for while they may be simple or obvious to one versed in the subject, these preliminary steps are essential lest those unacquainted with the subject matter be left mystified. It may then proceed step by step to the finished product.

There should be predominating features in the exhibit that the public will desire to see, and not merely those things which the exhibitor wants them to see. For instance, a certain technical exhibit might not sound interesting to the public, but they might be brought into the area by a spectacular or intriguing display not part of the main theme and then, on being exposed to the technical features, have their interest aroused and remain to study the whole exhibit.

The most technical of demonstrations will be understood by groups of different educational backgrounds if the consecutive steps in the development are logically presented. Sequences should contain exhibits of high value to all age and educational groups, and, if possible, have elements of dramatic, nostalgic, or emotional appeal. General interest is best reached when the individual can see an application to his own life or welfare. Motion of itself is not essential, but it is usually the easiest way to tell a story.

The following points may be included in the exhibit story: (a) basic science (b) invention; (c) development; (d) present day manufacture and use; (e) social implications.

Extensive collections of similar objects or products are usually of interest only to the specialist, the research student, or possibly the maker or the curator who assembled them. A few outstanding specimens, or those obviously different, have greater appeal to the average visitor. Too many objects or products should not be encompassed from a single viewpoint. It is better to focus attention on one, or at least a few, at a time. Saw tooth cases, wing-walls, or alcoves, help to accom-

plish this purpose. Overcrowding is to be guarded against in any circumstance.

Providing a lure. Exhibits are in competition with each other for the visitor's time and attention. Any exhibit, to be effective, must attract visitors to it. While this may be accomplished in a variety of ways, a common and effective technique is to place a colorful, interesting, or otherwise alluring object, symbolic of the subject being covered, in such a position that it will be seen by as many people as possible outside the exhibit area.

Variety. A highly effective means toward lessening or eliminating mental and physical fatigue is the utilization of variety. This involves the elimination of standardization in lighting fixtures, floor coverings, wall treatments, color, design, labeling, etc. Variety, or a change of pace from one exhibit area to another, results in greater effectiveness for all exhibits through the elimination of the mentally numbing effect of "sameness."

Allowing the visitor to participate. Visitors enjoy becoming personally identified with any presentation. If a machine is operable, it is well to let the visitor operate it—preferably physically or manually. Pushing an electric button is better visitor participation than none, but it has lost much of the appeal it once had. The push-button saves electric current and wear on the exhibit, but it does not provide the visitor with the desired opportunity to use his muscles or brain. If a full-size reconstruction or a habitat group is shown, let the visitor walk into it. He then becomes a part of the scene, and it is far more realistic than if viewed through plate glass. Safety, of course, is highly important in visitor participation and should be amply provided.

Demonstration. The combination of demonstrator and exhibit is usually more effective than either alone. The demonstrator provides a descriptive narration longer than the average visitor will read in a label, emphasizes points of interest, and is available to answer technical questions, and to provide a friendly, human association. When visitors are in groups, as from schools, he holds them together. He may also perform a series of scientific experiments or product demonstrations from a "Punch and Judy" type of booth.

The demonstrator's effectiveness is influenced considerably by the exhibit design. It is important to provide space for the demonstrator to stand somewhat above the floor-level, facing his audience, in a quiet area, not on a main traffic artery, and with good demonstration equipment readily at hand. A good amplifying system may be provided.

Aiming the exhibit at the audience. If an exhibit is pitched at a level above the capabilities of the audience, it will be understood by only a few. If the learner has not learned, the teacher has not taught. This is not only a philosophical thought; it is directly related to exhibition techniques. The most technical subjects can be presented effectively if the proper techniques are selected. The exhibit designer's basic approach should be the assumption that the visitor, no matter how well versed he may be on other subjects, is uninformed on the subject at hand.

Repetition. Facts are not absorbed and retained by the "once-over-lightly"

method. They are learned through constant association, repetition and recall. In presenting a difficult subject to an uninformed audience, it is desirable to utilize repetition. Tell them what you are going to say; say it, then tell them what you have said. But use an entirely different wording in each case to avoid the appearance of duplication, to avoid monotony and fatigue, and to provide interest and intrigue.

Appeal to a variety of senses. An exhibit should appeal to as many of the senses as possible. Sight alone is not nearly so effective as an appeal to sight and hearing, which in turn is not so effective, as an appeal to sight, hearing and touch. Occasionally an exhibit lends itself to the senses of smell and taste.

Maintenance. An exhibit which is out of order or from which parts are missing is not accomplishing its purpose. Exhibits should be designed in such a manner as to be exceedingly rugged. Operating exhibits should have over-size motors, and a factor of safety in moving parts far greater than normal design. An enthusiastic audience subjects them to an unbelievable amount of abuse. Easy access should be provided in and behind exhibits for cleaning, lubricating, repair, adjustment, replacement and relamping. An "out of order" sign destroys their value, no matter how attractive they looked on opening day. When an individual mechanical exhibit forms a focal point of an exhibition area it should be built in whole or in part in duplicate so that it may be replaced immediately in event of failure. In designing exhibits, provision should be made for protection from thievery and vandalism. It must be assumed that the public is acquisitive as well as inquisitive. Protective devices range from the glass or other enclosure to alarms which will sound when an exhibit part is removed or a restricted area is entered. These alarms may consist of electrically wired carpets, wires, or lead foil which when broken cause a bell to ring, or photo electric cell installations.

Long service with a minimum of maintenance and freedom from "shut down" is indicative of good exhibit design.

Lamps. For lighting exhibits standard lamps should be used wherever possible. For economy of operation and for less heat dissipation, fluorescent and cold cathode lamps are favored. When fluorescent lights are used, high power factor auxiliaries should be specified. Lights should be provided in work space behind exhibits with a switch located at the access door. Where switches not intended for public use are installed in public space, a key switch should be used so only an authorized attendant can set the exhibit in operation. All circuits except those for lighting should have a starting switch within sight of the equipment controlled and, if practical, within sight of its moving parts. Motor circuits should have running and short circuit protection.

Fumes. Exhibits liberating much heat, fumes, poisonous or disagreeable gases, should be provided with special exhausts to the outside atmosphere.

Glass. Glass in counters or flat top cases should be $\frac{1}{4}$ inch plate glass where the minimum dimension of the glass is 30 inches or less. Where the minimum dimension of the glass is more than 30 inches, $\frac{3}{8}$ inch plate glass should be used. In cases containing valuable exhibit material, safety glass provides protection.

All walls, railings, or other portions of exhibit installations subject to extensive use or contact should be surfaced in such a way as to eliminate maintenance. Railings should be of aluminum, stainless steel, plastic, or other material that will not require painting. Paint will wear off quickly and is to be avoided. Areas surrounding push buttons or switches used by visitors should be covered with plastic or other material which will not show dirt and finger marks. Such protective covering should extend 10" in all directions from the push button. A recessed toe space or kick plate which will not scar should be provided at the base of all exhibit cases.

Exhibits should be designed to accommodate the natural flow of visitor traffic. Sharp corners and abrupt reversals are to be avoided. Ample work space should also be provided behind the exhibits to maintain them properly. Exhibit cases should be dustproof and made so that they are easily opened from the back. Real or actual objects are preferable to models or mock-ups. In working exhibits, parts not essential or visible may be removed (such as pistons in display engines).

Credit labels should be for identification and informative purposes and not for claims or advertising. Exhibit labels should be written for the public and not to amaze other curators or experts on the subject. Labels should use simple English with sequential steps, and have clear type and good lighting. Whenever substitution or replica is used in place of the original, it should be so stated in the label.

"Good Luck"

A fair is show business with all its glamour, excitement, and uncertainties. Even those with long experience are never certain of public acceptance and the nervousness of producers on opening night is traditional. The reaction of the public is so complex and may be so radically affected either way by a circumstance which seems trivial that their response is difficult to predict. David Belasco, one of the greatest producers of all time and still a by-word for his many successes on Broadway, had his failures which the public quickly forgot. D. W. Griffith, who produced the immortal "Birth of a Nation", had a disappointing box office for his next picture "Intolerance"—though perhaps it had the most elaborate sets ever designed. A more recent picture "It Happened One Night", though simply produced and released without fanfare, proved a phenomenal success undoubtedly beyond the expectation of those who wrote, directed, or played in it.

Those who take an active part in the operation of a major fair are likely to look back upon it as one of the most interesting and exciting experiences of their lives, but are quite content to let others run the next one. So, to those in the future who plan, build, and operate a fair, the author wishes good weather and a happy ending.

Appendix I

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Appendix II

SOUTH PARK ORDINANCE

WHEREAS, An Act of the General Assembly of the State of Illinois entitled, "An Act in relation to The Chicago World's Fair Centennial Celebration," approved June 18, 1929, provides, "That in case the site or sites for the holding of the said Chicago World's Fair Centennial Celebration, as finally located and fixed by the authorities in charge thereof, shall include lands, whether submerged or otherwise, the title or control of which is in any Park Commission for public park purposes, then and in that event the use of such lands for the purposes of said Chicago World's Fair Centennial Celebration shall be conditioned upon the consent and approval of such Park Commissioners, and it shall be competent, and express authority for that purpose is hereby granted to the Park Commissioners having the control and management of such public park lands, whether submerged or otherwise, to allow the use of the same, or any part thereof, for the purposes of said Chicago World's Fair Centennial Celebration upon such terms and conditions, including admission fees to be charged by said Chicago World's Fair Centennial Celebration, as may be agreed upon between the said Park Commissioners and the authorities having the management of said Exposition;" and,

WHEREAS, the Chicago World's Fair Centennial Celebration, the name of which was later officially changed to "A Century of Progress," and a corporation not for pecuniary profit, known as "A Century of Progress," was organized under the laws of the State of Illinois for the purpose and object of preparing and holding a World's Fair in the City of Chicago in the year 1933, has located and fixed as the site for holding said Fair, certain parts of the Park lands under

the jurisdiction of the South Park Commissioners; now, therefore,
Be It Ordained by the South Park Commissioners:

Section 1. Permission and authority are hereby granted under the terms and conditions hereinafter set forth to "A Century of Progress," hereinafter designated "The Corporation," to use all or such portions of land and water areas and structures therein which are under the jurisdiction of the South Park Commissioners, hereinafter designated "The Commissioners," and which lie along and adjacent to the shore of Lake Michigan and east of the grounds and right of way occupied by the Illinois Central Railroad in the City of Chicago between Roosevelt Road, extended, on the north, and Thirty-ninth Street, extended, on the south, as may be required for the purpose of constructing, bringing into being and operating a World's Fair, together with such other operations as may be customary or necessary in developing and operating such a Fair, all as shown on plan entitled "World's Fair Plan," dated February 1, 1930, and marked "Exhibit A" and hereto attached. For convenience the area indicated in this paragraph and shown in the plan will hereinafter be designated as the "Premises."

Section 2. The said Corporation, at any time after the acceptance of this ordinance and the approval of the bonds to be given by said Corporation as hereinafter set forth and on sixty (60) days' notice to the Commissioners, shall have the right to enter upon said "Premises" and take possession of all parts thereof, except such portions thereof as are hereinafter expressly reserved, and may make such changes in and such use of said "Premises" or any part thereof as may be necessary for the purposes of such Fair, or necessary preparations therefor; subject, however, to all of the provisions of Section 3 hereof and provided that said sixty (60) days' notice to the Commissioners may be waived in whole or in part by said Commissioners.

Section 3. The said Corporation shall have the right to enclose by fence or fences such portions of said "Premises" as it may desire, subject, however, to the approval of the Commissioners, provided, however, that satisfactory means of ingress and egress to and from such portions of the "Premises" as are not so enclosed shall be open to the general public; and provided, further, that the bathing beaches at the foot of Twelfth Street and the foot of Thirty-first Street, and suitable entrances thereto shall remain open to the general public until the day following Labor Day of 1932. Said Corporation shall and it hereby agrees that it will build at its own expense a roadway 100 feet in width immediately east of and adjoining the right of way of the Illinois Central Railroad Company in the territory from Twelfth Street, or Roosevelt Road, extended, to Thirty-ninth Street, extended. In the construction of this roadway the Corporation may take advantage of such portions and widths of roadway as have already been constructed by the Commissioners in the above mentioned territory. This roadway shall be built according to the plans and specifications approved by the South Park Commissioners and shall be properly illuminated by an electric lighting system in accordance with the Commissioners' standards, and

all the electrical work to be done in accordance with the specifications approved by the Commissioners. The construction of this roadway shall include the necessary connections to and with existing structures, either overhead or depressed, so as to make the same conveniently accessible to the traveling public. The Corporation shall and it hereby agrees to build an additional by-pass, approach or roadway at Twenty-third Street viaduct, sufficient in size to accommodate not less than four lanes of traffic. All the above enumerated road construction work shall be commenced and concluded during the year 1930. Nothing herein contained shall prohibit the Corporation from taking necessary measures to prevent the encroachment of persons and/or vehicles upon such portions of the "Premises" as may be in actual use during the preparation for said Fair.

Section 4. The said Corporation shall have the right, subject to existing contracts and obligations to which the Commissioners are a party, or such amendments thereto as may be consummated, to use the Adler Planetarium and Soldier Field, including exhibit spaces therein, as parts of the World's Fair to the same extent and in the same manner as buildings erected for and by the said Corporation and to charge special fees for entrance to either or both of said structures, and to enclose them by a fence or fences, as provided in Section 3; provided, however, that the said Adler Planetarium and Soldier Field shall remain under the jurisdiction of the Commissioners as at present, and that existing entrances to said structures shall not be closed until January 1, 1933, and provided further that the Corporation shall pay to the Commissioners on or before the tenth day of each month ten per cent of the gross proceeds received during the preceding month, derived from special fees charged by the Corporation for entrance to either or both of said structures over and above the fees paid for admissions to the grounds of the exposition, in which fees the Commissioners have no interest. The Corporation agrees that during the time Soldier Field and the Adler Planetarium are under its control it will employ at its own expense such employees of the Commissioners as are necessary in the opinion of said Commissioners to maintain and operate said Soldier Field and Adler Planetarium at the standard established by the Commissioners before turning the same over to the Corporation; such employees to include members of the staff of the Commissioners, electricians, plumbers, carpenters, tuck-pointers, and such others as may be essential. It is expressly understood and agreed that possession of the Adler Planetarium and Soldier Field, the sub-station at Thirty-ninth Street and pumping station at Twelfth Street are to remain in the possession and control of the Commissioners, and the Corporation shall have no right to the possession thereof until the opening day of the Fair. Provided, however, that nothing herein contained shall prohibit the Corporation under such agreement as may hereafter be made for that purpose, from entering said Adler Planetarium, Soldier Field and the station at Twelfth Street for such purposes connected with the preparation of the exposition as may be necessary.

Section 5. The Commissioners hereby consent to the use of the Field Museum of Natural History, the Art Institute of Chicago and the Shedd Aquarium by

the Corporation, during the continuance of the Fair, provided the Boards of Directors or other operating management of said Museum, Institute and Aquarium shall also consent to the use of such structures, and the Corporation will procure and deliver to the Commissioners the written consent of each of said above named institutions in proper form; provided, the necessary legislation for that purpose may be enacted by the legislature of the State of Illinois.

Section 6. Such buildings and portions of the "Premises" only as are herein expressly reserved to the Commissioners shall be under the care and supervision of the Commissioners, and all other portions of the "Premises" shall be under the care, supervision and control of the Corporation, and the Corporation shall be responsible and hereby assumes full responsibility for the care, safety and maintenance of any buildings, work or construction of every kind or of any property of said Corporation and of persons and property upon all such portions of said "Premises" as are in possession and control of said Corporation for and during the construction of buildings and other preparations for the operations in connection with said Fair and for and during dismantling operations; until such time as all of the "Premises" taken over by the Corporation under the terms of this ordinance shall be returned to and accepted by the Commissioners.

Section 7. The Corporation may, at its own expense, before the opening of the Fair, build a revetment on the west side of the northerly island and the east side of the mainland, running from the existing causeway on the north to the line of Sixteenth street, extended, on the south, each revetment to extend into the water approximately one hundred and fifty (150) feet, thereby contracting the present lagoon substantially three hundred (300) feet in width. In the event that the Corporation constructs such revetments it hereby agrees to fill in behind both revetments with material, which, in the judgment of the Commissioners is suitable for the purpose, all of which will be at the expense of the Corporation. In the event that the Corporation does not construct such revetments, nothing herein contained shall be construed to prevent the Commissioners from constructing such revetments and filling in behind the same before the opening of the Fair.

Section 8. Subject always to the superior governmental control of the Commissioners over any and all portions of the "Premises" to be taken over by the Corporation hereunder, the corporation by the acceptance hereof agrees to provide for the adequate police, fire and health protection to the public in the portions of the "Premises" taken over by it while under its control, but nothing herein contained shall be construed as depriving the Commissioners or its officers or employees from going upon any part of said "Premises" or going into any structures erected thereon, for the purpose of enforcing any ordinance of the Commissioners or laws of the State of Illinois.

Section 9. During the time that the said Corporation shall have control, management and policing of any portion or portions of the said "Premises" as hereinbefore provided, the said Corporation shall pay all costs for the care,

maintenance and protection of such portion or portions of said "Premises" and of all buildings, structures, roads, walks, sewage and water systems, plantations and other works therein and the Commissioners shall be at no expense whatsoever in regard thereto; provided, however, that a reasonable number of the employees of the Commissioners and the members of the South Park Commission shall have access at all times to any area turned over to the Corporation in order that the Commissioners may make reasonable inspection and may be assured that due care is being taken of such works enumerated above as are turned over to the Corporation, and that any operations of the Corporation affecting such works are properly carried out. The Commissioners further agree to permit the Corporation to make any necessary use of or connection with the utilities installed by the Commissioners, provided that such connections must be specifically approved by the Commissioners and the work done thereunder inspected by the Commissioners at the expense of the Corporation, and a complete report, with suitable plats, plans and descriptions, shall be made to the Commissioners within fifteen (15) days after the completion of each connection. Nothing in this section contained shall be construed to obligate the Corporation to repair damage, if any, caused by the ravages of the waters of Lake Michigan, except such structures, if any, as may be built by the Corporation in, upon, or over the waters of Lake Michigan, and such structures, if any be built, shall at the conclusion of the Fair, be either removed by and at the expense of the Corporation, or retained for park purposes, as may be determined by the South Park Commissioners.

Section 10. Immediately after the closing of the Fair on or about November 1, 1933, the Commissioners may designate such buildings, utilities, structures, plantations and other works erected or constructed at the expense of the Corporation, other than concession buildings, as said Commissioners may desire to retain for park purposes, and all such designated buildings, structures, utilities, plantations or other works shall be surrendered by the Corporation to the Commissioners within ninety (90) days after being so designated, without cost to the Commissioners. All buildings, structures, utilities, plantations or other works erected or constructed for the purpose of the Fair not so designated by the Commissioners shall be removed by the Corporation at its own expense; and the areas turned over to the control of the Corporation by the Commissioners, with all buildings, structures, utilities or other works, the property of the Commissioners in those areas, shall be restored by the Corporation, at its own expense, to approximately the same condition in which such area was prior to the Corporation taking over the same. In the event that such restoration is impossible, in the judgment of the Commissioners, the Corporation shall pay to the Commissioners a sum of money, to be agreed upon, in lieu of such restoration. It is further agreed that if on July 1, 1935, any portion or portions of the "Premises" have not been restored by the Corporation to a condition equal to that in which it was when turned over by the Commissioners to the control of the Corporation, or otherwise disposed of as hereinbefore provided, the said

Commissioners may enter such areas and proceed to such restoration at the expense of the Corporation.

The plan entitled "General Plan of Improvement in Grant Park and Lake Front Extension between Roosevelt Road and Thirty-ninth Street," dated January 1, 1930, and marked "Exhibit B," in eight sheets (file number M-6-2990) attached hereto, shows buildings, structures, utilities and other works existing on the "Premises" on January 1, 1930; and this plan, with such amendments thereto as may be necessary, to show any additional work done on any portion of the "Premises" before such portion is turned over to the control of the Corporation, shall form the basis of all matters of dispute which may arise in restoration work as to the condition of the "Premises" when taken over by the Corporation.

Section 11. The Commissioners agree that the Corporation may charge a general admission fee to the grounds of "A Century of Progress" exposition to be held in 1933 and that the Corporation may, if it so desires, open a portion or portions of said exposition "Premises" as such portions become available during such parts of the years 1931, 1932 and 1933, as it may desire and that said Corporation may charge an admission fee to any such portion or portions so opened to public inspection.

Section 12. The use of said "Premises" for the holding of a Fair by the said Corporation is granted for the purposes of said Fair upon the further express condition that said "Premises" shall be used during the periods above mentioned only for the purposes of said Fair and subject to the foregoing terms and conditions. The acceptance of this ordinance by said Corporation shall constitute on its part an agreement to fully comply with all of the terms and conditions thereof.

Section 13. The Corporation by the acceptance hereof agrees at its own expense to carry fire insurance on all structures now erected or hereafter to be erected on the "Premises," the property of the Commissioners, during the period that the Corporation shall have control of said structures in such companies and in such amounts as shall be approved by the Commissioners, the policies on which shall be made payable to the Commissioners, and said policies shall be deposited with the Secretary of the Commissioners, and said Corporation by the acceptance hereof further agrees to carry insurance at its own expense to protect the Commissioners from any claim for damage to person or property in or upon any portion of the "Premises," the control of which is by the terms of this ordinance transferred to the Corporation, the amount of said insurance and the companies to write the same, to be subject to the approval of the Commissioners, and the said policies to be deposited with the Secretary of the Commissioners, and the Corporation further agrees to carry at its own expense insurance in such amount and in such companies as shall be approved by the Commissioners for the purpose of indemnifying and protecting any person or persons for damage to his or her person or property by reason of any negligent act or omission to act of the Corporation, its officers, servants, agents, contractors, sub-contractors on any of

the "Premises" transferred by the Commissioners to the Corporation by the terms hereof, said policies to be delivered into the possession of the Secretary of the Commissioners for the benefit of any such person or persons having a right of action against the Corporation or the Commissioners. And the Corporation further agrees to hold the Commissioners harmless from and against any and all liabilities, claims or demands which may be brought against said Corporation or said Commissioners, or both of them, by reason of, arising from, growing out of, or resulting from the carelessness, negligence or default of said Corporation, its agents, employees, or servants in connection with the preparations for or the conduct of the Fair and said Corporation agrees at its own expense to defend the said Commissioners against any and all claims, suits or demands which may be so brought against the Commissioners, and further agrees at its own expense prior to the taking possession of the said "Premises" to furnish the Commissioners a satisfactory bond in a sufficient sum as hereinafter set forth to indemnify the Commissioners against any and all liabilities, judgments, costs, loss, damage or expense which may be sustained by said Commissioners by reason of, arising from, or growing out of the contractual relation hereby established, and conditioned also for the prompt performance by the Corporation of all the work to be performed by it in the restoration of the premises as required in section ten hereof.

Section 14. It is expressly understood and agreed between the Corporation and the Commissioners that any and all concessions, grants or permits granted or issued by the Corporation to any person, firm or corporation for exposition purposes shall terminate with the closing of the Fair.

Section 15. All buildings, structures or other works erected on the "Premises" by the Corporation or by any person, firm or corporation acting under a permit or authority from the Corporation, shall be constructed in accordance with the Statutes governing the construction of buildings in this State, and it shall be the duty of the Corporation to enforce the observance of the same.

Section 16. All the provisions of this ordinance shall be incorporated in and become a part of all contracts entered into between the Corporation and all persons, firms or corporations to whom such Corporation may grant concessions during the period of the Fair, or all such concessions and contracts with concessioners, shall recite that such contracts and concessions are subject to all the terms, conditions and limitations of this ordinance.

Section 17. In the event that any person, firm or corporation to whom the Corporation has granted a concession shall undertake the construction of a building or other structure which, in the opinion of the Commissioners, would be considered a permanent structure, the South Park Commissioners hereby reserve the right to reject the plans for the construction of such building, and refuse to allow the construction of the same. The term "permanent structure" shall be construed to mean a building or buildings with foundation and walls of such material, size and character as to indicate the construction of a building designed to outlive the period of the Fair and to stand for a number of years.

Section 18. Within thirty (30) days after the acceptance in writing of this ordinance by the Corporation, said Corporation shall file with the Commissioners a bond in the penal sum of \$250,000 in form and with surety to be approved by the Commissioners, said bond to be conditioned for the construction and operation of a Fair to cost not less than five millions of dollars, for the faithful performance of all the terms and conditions herein prescribed and also to indemnify and save harmless the Commissioners against all damage on account of the use of said grounds for the purpose of said Fair or the passage of this ordinance. Said bonds shall provide that one year from the date of said bond the penalty thereof shall automatically be increased to five hundred thousand (\$500,000) dollars and two years from the same date the penalty thereof shall automatically be further increased to one million (\$1,000,000) dollars, and shall remain at that amount until the close of the exposition, after which time it shall be reduced by such amounts and at such times as may be agreed upon with the Commissioners.

Section 19. In consideration of all the rights, grants and privileges in this ordinance contained by the South Park Commissioners to the Corporation, the Corporation hereby agrees that after the close of the Fair and the payment by the Corporation of all its outstanding bonds, obligations and liabilities, of every kind and nature, including the discharge of all obligations in this ordinance herein above assumed, or in any amendment thereto, the Corporation will pay to the Commissioners, twenty-five (25%) percent of all surplus funds remaining in the hands of the Corporation.

Section 20. This ordinance shall be accepted in writing by said Corporation within thirty (30) days after its passage; otherwise it shall be null and void.

STATE OF ILLINOIS
COUNTY OF COOK
SOUTH PARK COMMISSIONERS } ss.

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